HK-4D-U202 Four-axis Screw Machine User Manual

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Catalog

Chapter 1 Overview

There are 4 controlling axis in the Automatic Screw Machine control system, which can be used for the gantry, single work table and double work table and so on the many kinds of mechanical structure, at the same time the system supports the adsorption type, blowing type and magnetic suction screws from a variety of ways , which greatly expand the usage scenarios of the system, In addition, the addition of hidden menu function also makes the system achieve both professional and easy to use. And the new processing interface allows users to more intuitively understand the processing progress and the overall production status. The teach box of the machine adopt the 5 inch true-color LCD screen to make the operation menu and boot screen more abundant. The teach box can not only storage processing file,system configure file,but also copying file each other when using multiple machines.And the system can be upgraded and backed up through the U disk interface to facilitate the mass production of the equipment. To make the transmission speed faster and signal Anti-Interference,it adopts the Industrial field bus for connecting between main board and teach box. The Automatic Screw Machine control system using ARM + DSP + FPGA control program, with a strong computing power, short refresh time, excellent acceleration and deceleration performance in motion control. The motion control board has 128M of storage space, can store 1000 processing files, each file can store 900 programmed point, it can support work without teach box connection, processing files can be selected by digital tube and button options.

1.1 Hardware

1. Motor axis number: 4 axis output.
2. Acceleration and deceleration performance: The acceleration and deceleration acceleration of each axis are set independently.
3. Pulse output frequency: Maximum 4MHz pulse output. Taking the motor with 20,000 pulses per revolution as an example, it can reach 6000 RPM, which is enough to meet the requirement of 5000 RPM of the existing high-speed servo motor.
4. Programmable input/output: 24 programmable input 16 programmable output are optocoupler isolation, each output current can be up to 500mA.
5. Supporting 3 bits digital number tube interface, can change and switch 1000 files range 0-999 quickly.
6. Using the small key to adjust, in the absence of a teach box can also facilitate the realization of the error due to the changing an electric screwdriver head correction.
7. Read/Write in U Disk: Using the FAT32 file system, no longer restricted by the situation that U disk larger than 2GB cannot be formatted into FAT format.
8. Storage space: main board 128MB, can store 1000 processing files, each with 900 program points; teach box 4MB, can store the boot screen, file, copy the file to each other in multiple machines is especially useful.

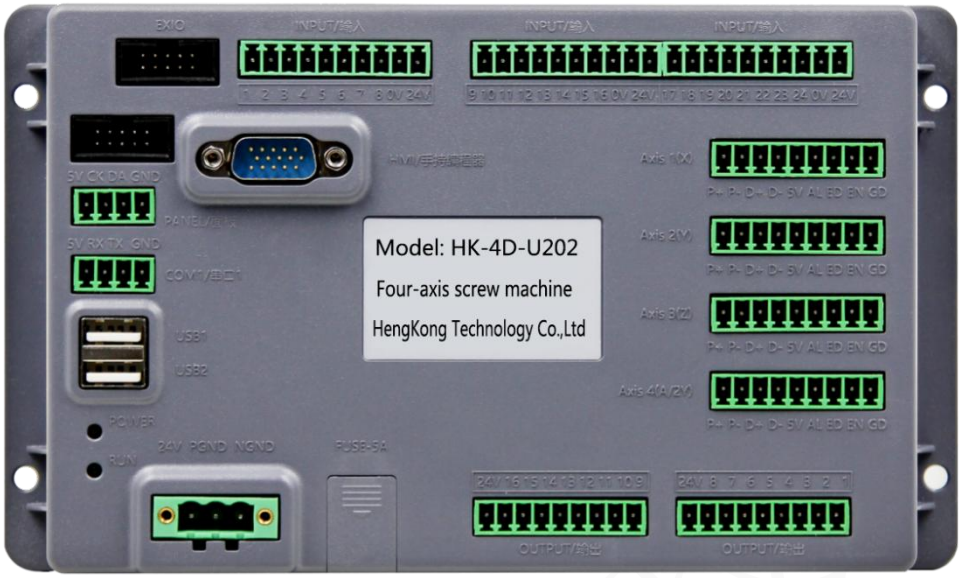
9. Screen of teach box: Use 480 x 272 pixels, 16 million true color 5-inch LCD screen, allowing the operator menu interface and boot screen is much more abundant.
10. Work Voltage: DC 24V, current 2A.
11. Work environment: degree 0℃--45℃, humidity 40%--80%.
12. Storage environment: degree -40℃--60℃, humidity 0%--95%.

1.2 Software

1. There can be 20 times of "undo" and "redo" for editing the programming point to prevent misuse effectively.
2. Machining parameter setting is set up in the programming point, which can be realized in the same process when different areas have different parameters.
3. In the return to the origin of the action when the axis back to the origin of the X、Y、Z、A/Y2 four axis at the same time the origin of the capture action.
4. With Quanpin IME to input Chinese.

1.3 Accessory

1. Main board (HK-4D-U202)



2. Teach box(242mm * 142mm * 26mm)

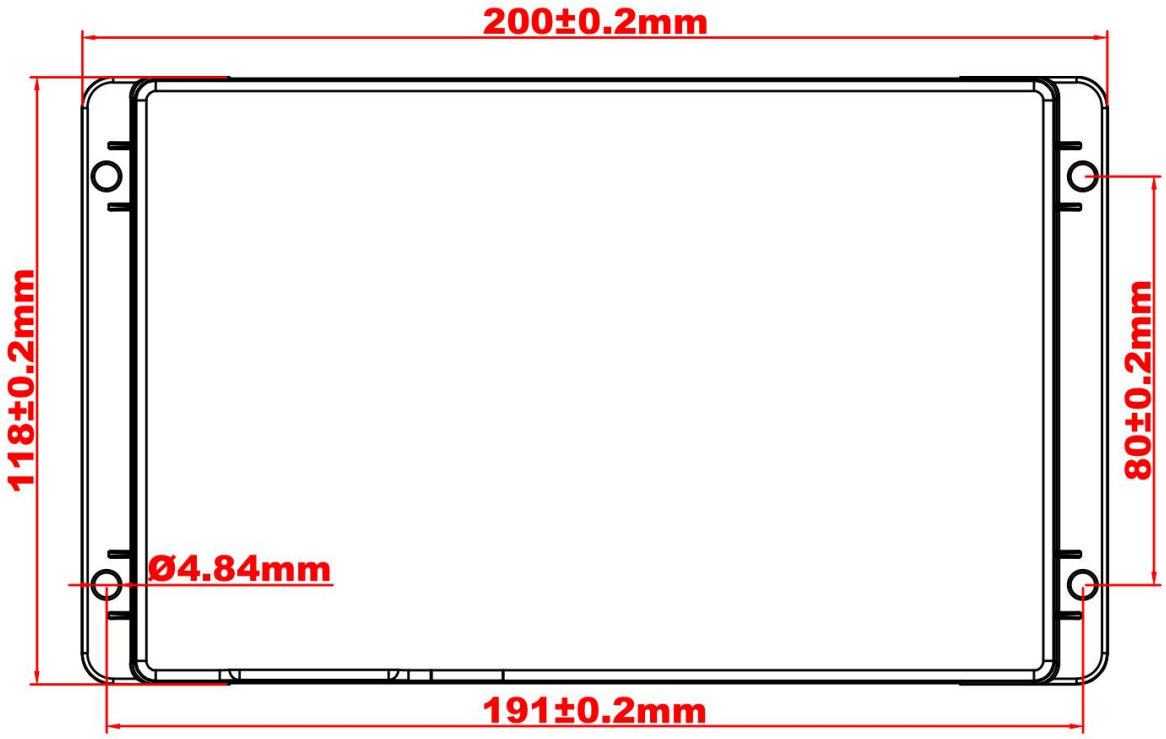
3. Program group selection and calibration panel(107mm * 40mm), Circuit board(70mm * 40mm)

4. Connecting line(Length can be customized)

Name	Quantity	Units	Length(m)
DB15 line	1	pcs	1.5
USB line	1	pcs	0.75
DB15 line(elbow)	1	pcs	0.75

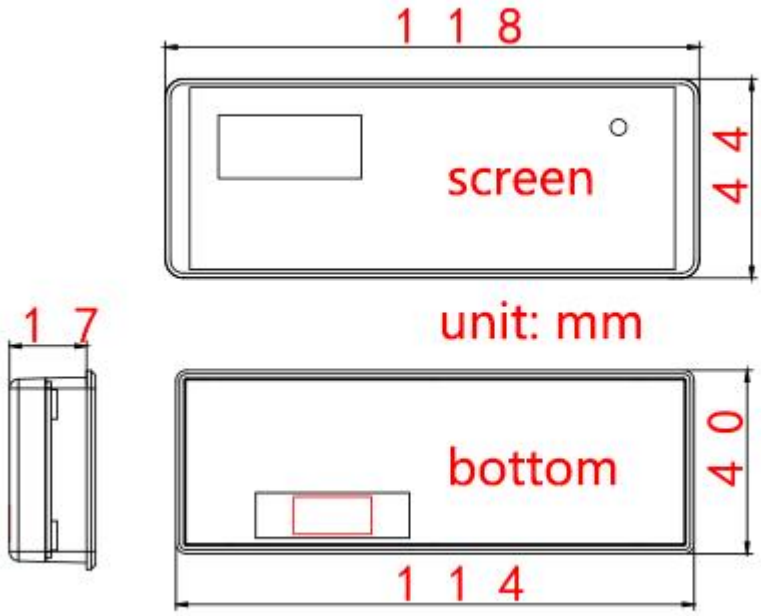
DB15 line USB line DB15 line(elbow)

1.4 Main board floor mounting dimensions

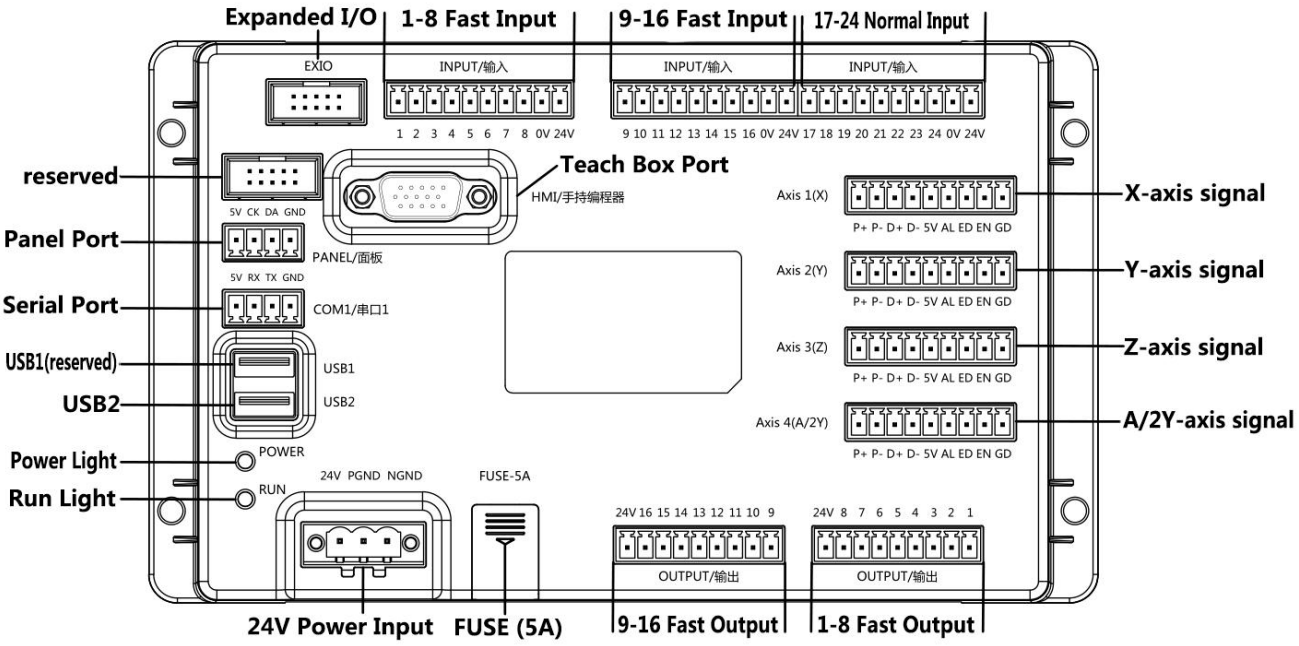


HK-4D-U202 Main Board

1.5 Digital tube installation size diagram

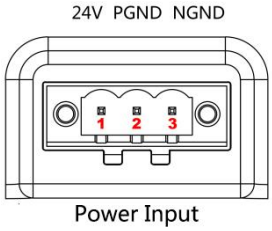


1.6 Interface Schematic

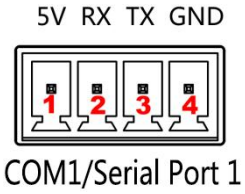


HK-4D-U202 Interface Schematic

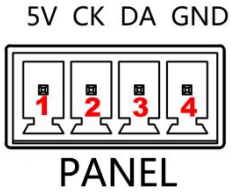
Special interface definition and description:



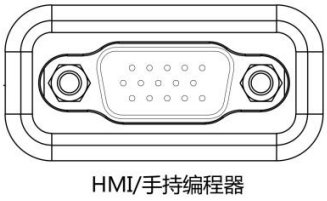
PWRIN: Power input pin definition and description			
No.	**Name**	**Function**	**Wiring description**
1	24V	24V power input	Connect 24V switching power VCC(DC V+)
2	PGND	0V	Connect 24V switching power 0V (DC V-)
3	NGND	ground	Connect 24V switching power FG (⏚)



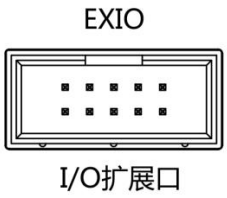
COM1: serial port 1 pin definition and description			
No.	**Name**	**Function**	**Wiring description**
1	5V	5V power supply	Connect 5V power supply VCC/5V
2	RX	data receiving	Connect to serial port receive TX
3	TX	data transmition	Connect to serial port transmit RX
4	GND	ground	Connect to serial port ground 0V/GND



PANEL: panel pin definition and description			
No.	**Name**	**Function**	**Wiring description**
1	5V	5V power supply	Connect 5V power supply VCC/5V
2	CK	clock signal	Connect panel clock line CK
3	DA	data signal	Connect panel data line DA
4	GND	ground	Connect panel ground 0V/GND



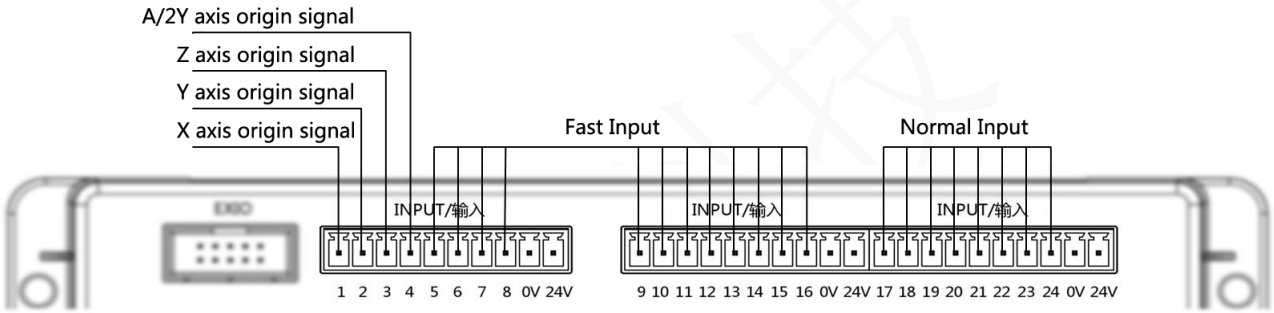
HMI/Teach box interface should be connected to DB15



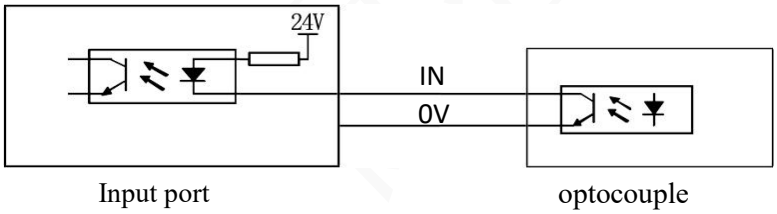
Expended IO interface should be connected with 10Pin ribbon cable

Input definition and description:

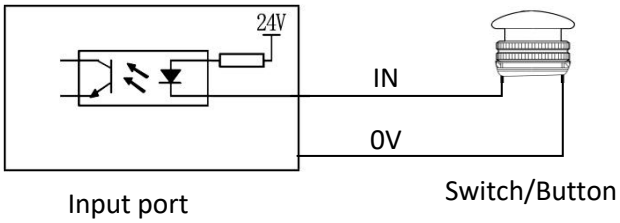
Input: Input pin definition and function description			
No.	**Name**	**Function**	**Wiring description**
1	No.1 Input	X axis origin signal	X axis origin sensor signal OUT(black line)
2	No.2 Input	Y axis origin signal	Y axis origin sensor signal OUT(black line)
3	No.3 Input	Z axis origin signal	Z axis origin sensor signal OUT(black line)
4	No.4 Input	A/2Y axis origin signal	A/2Y axis origin sensor signal OUT(black line)
5-16	No.5~16 Input	Programmable fast input	Buttons, locked-rotor signal, calibration signal (capture is supported) and so on
17-24	No.17~24 Input	Programmable normal input	Buttons, sensor signal and so on(capture is not supported)



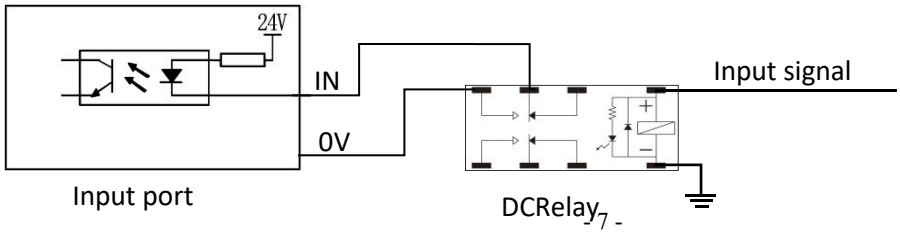
Input typical wiring: optocoupler signal wiring mode



Input typical wiring: switch signal wiring mode

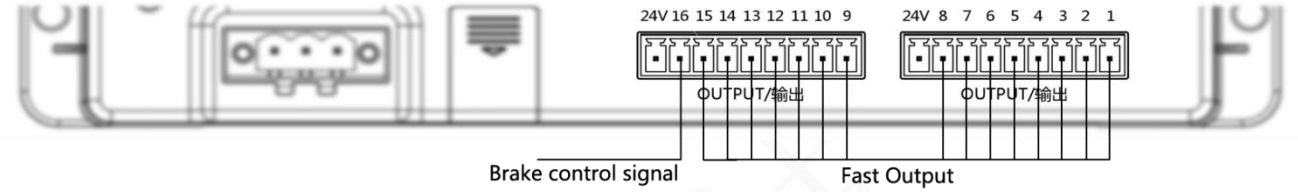


Input typical wiring: Relay transfer mode

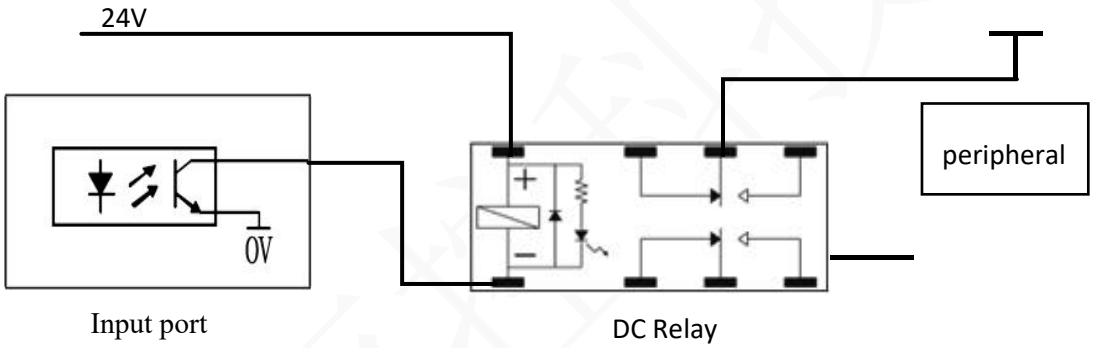


Output definition and description:

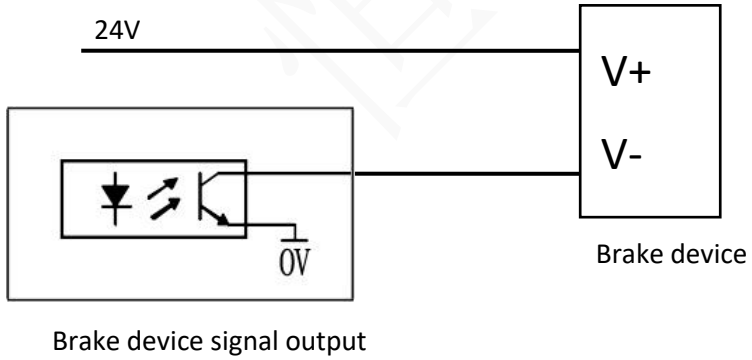
Output: Output pin definition and function description			
No.	**Name**	**Function**	**Wiring description**
1-15	No.1~15 Output	Fast output	Optocoupler output, can be used to control peripheral devices
16	Brake signal	Brake control signal	Brake control signal(Default), can be configured as a common output



Ouput typical wiring: Relay transfer mode

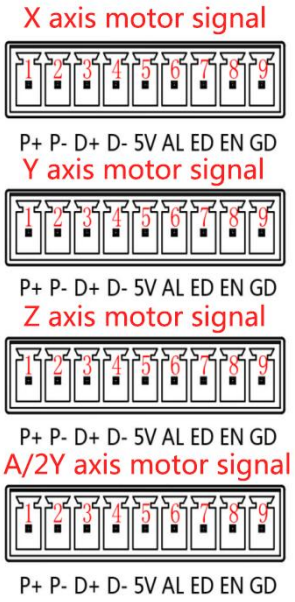


Wiring diagram of brake device:

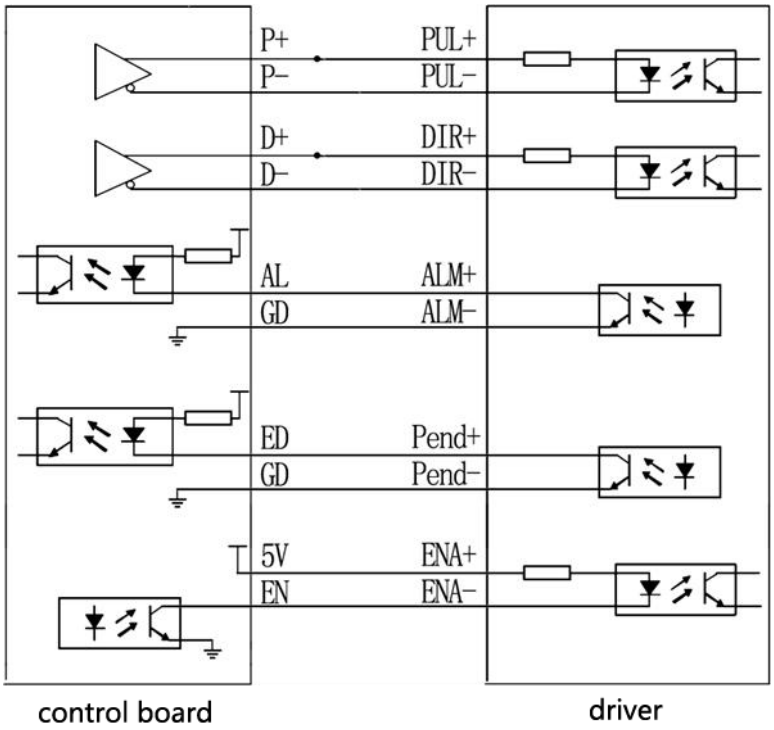


Motor interface definition and description:

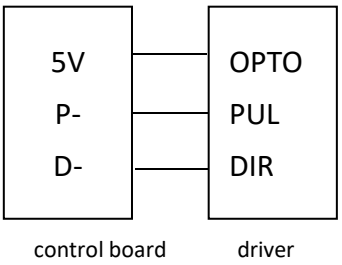
Motor signal pin definition and function description			
No.	**Name**	**Function**	**Wiring description**
1	P+	pulse signal+	Motor pulse positive signal, differential signal type (5V voltage range)
2	P-	pulse signal-	Motor pulse negative signal, differential signal type (5V voltage range)
3	D+	direction signal +	Motor direction positive signal, differential signal type (5V voltage range)
4	D-	direction signal -	Motor direction negative signal, differential signal type (5V voltage range)
5	5V	5V DC power	5V DC power supply
6	AL	Driver alarm input	Driver alarm signal input port
7	ED	Positioning complete signal	Positioning complete signal input port
8	EN	Driver enable signal	Driver enable signal output port
9	GD	ground	Common ground of driver, encoder and board card



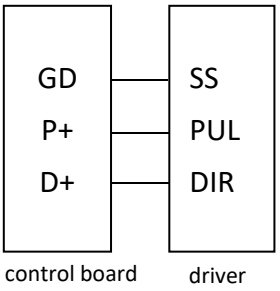
Differential mode wiring diagram:



Common anode wiring diagram:



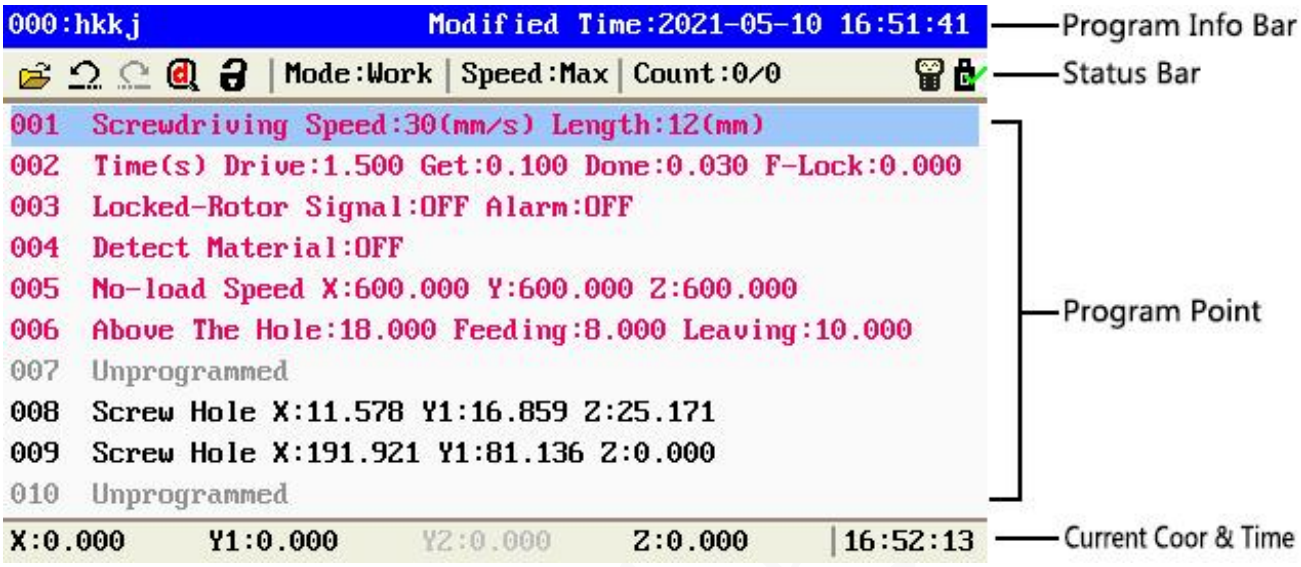
Common cathode wiring diagram:



Chapter 2 Main interface and key description

2.1 Main interface description

1. Main interface description of content distribution.



2. 000:hkkj File No. And File name, "000" is serial number, "hkkj"is file name.

3. Modified Time:2021-05-10 16:51:41 Latest modified time of the file.

4. Icon of open processing file, can use “Table” key move the cursor to this icon.

5. “undo”“redo” state indication icon, up to 30 times to “undo”, “redo”, but can’t use when icon is gray.

6. Means the processing file is edited, need “debug” operation, when already debugged, the icon becomes gray.

7. File is not locked, file is locked, machine is locked.

8. Speed:Max Move speed by manual, part of “fast, middle, slow”, press the "speed" key to switch.

9. Count:0/0 Workpiece counter, in front of the value is the count value of the workpiece, behind the value set the number of workpieces to be processed. If the work count reach the number of set to be processed, it will prompt that the workpiece counter is full.

10. Insert U Disk, No U Disk.

11. 拼音 Pinyin input, 123 number input, abc lower-case letter input, ABC capital letter input,

Press “#” can change the IME when in the character input state.

12. Icon of Drag and drop model, Press the "Help" button to enter the drag and drop mode.

13. Processing program editing area

Special color text description:

red words: Denotes the default parameter. Press the "Stop + Menu 2" key to enter the default value setting interface to set the parameter.

blue words: It means that the screw of this screw hole has failed, and replaying can be carried out by pressing the "single step" button

2.2 Teach box key description

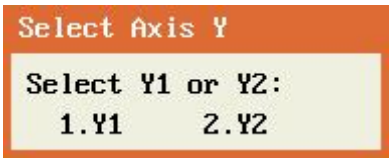
1. Z↑ Z axis up by manual
2. ↓Z Z axis down by manual
3. Y↑ Y axis front by manual
4. Y↓ Y axis back by manual
5. ←X X axis left by manual
6. X→ X axis right by manual
7. 1# Switch to Y1 axis
8. 2# Switch to Y2 axis
9. T. Speed Switch manual speed “slow, middle, fast”.
10. Esc Operation of exiting the menu or canceling the input dialog

11. 

Cursor switch between “machining programming point” area and “short menu bar” area

12. 

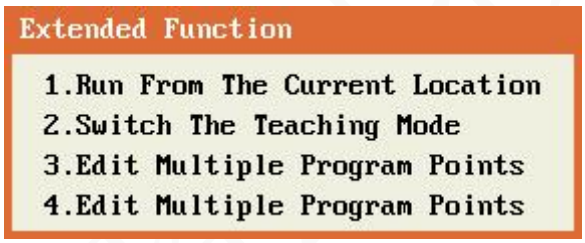
Analysis of the current file whether its programmed point accord with the programming rules, if yes,then the icon  will become gray. When in the preview or at the end of processing, press the "Debug" button to quickly select the shaft number of the screw which needs to be reworked.



screw rework prompt: This prompt will appear when it is necessary to make up the screw hole position which failed to be machined in double Y mode (The number of Y axes can be set in "Machine Type Setting -- Machine Structure" on page 5/6 of Menu 4) , after selecting the shaft number to be reworked, the machine will automatically reworked all the screw holes that failed to be machined on the shaft.

13. 

Press this button in the main interface to quickly open the function expansion interface.



1. Run From The Current Location： Run the program from the current line.

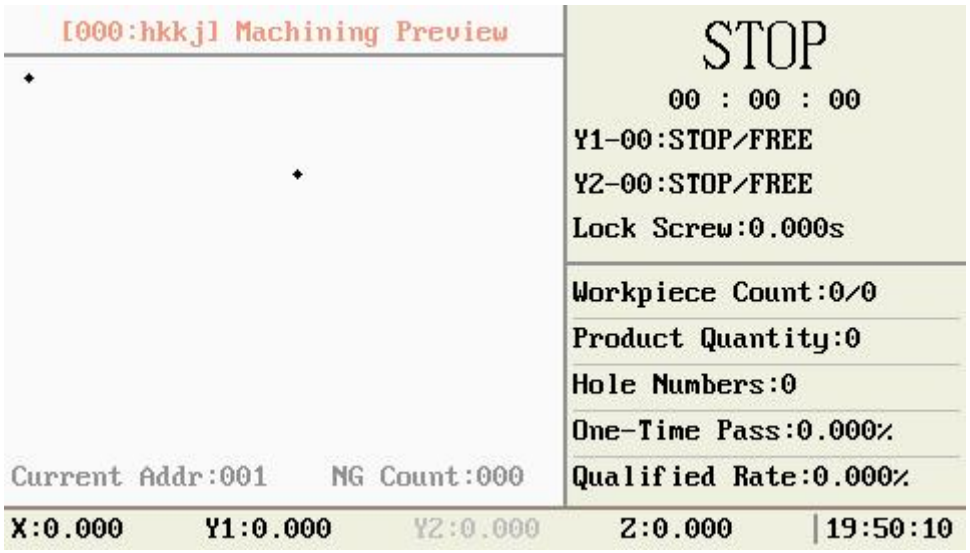
2. Switch The Teaching Mode: Switch teaching mode, Teach box or drag - drop teaching.

3. Edit Multiple Program Points: For more information, please see the "Multiple Programming" feature in Menu 1.

14. 

Preview the screw holes graphic in current machining program file in XY plane position, and view the current processing parameters and other information. Press 

to exit the interface.



Machining Preview:

When the hole position is not processed, the color of the hole position is indicated as follows: black is normal or not processed, red indicates the processing failure, and blue and orange flashing indicates the currently selected screw hole position.

During the processing, the color of the hole position is indicated as follows: black means not processed, blue means being processed, green means successful processing, and red means failed processing.

Current Addr: Displays the programming point address corresponding to the current hole location. The hole location is shown in blue.

NG Count： The number of holes that failed in this process.

Workpiece Count: After the execution of this programming point, the workpiece counter will increase the corresponding setting value and then compare whether the counted value overflows the limit value. If overflows, it will stop.

Product Quantity: Statistics are carried out according to the way that one Y-axis corresponds to one product. If there are multiple products placed on the Y-axis, statistics are also carried out according to one product.

One-Time Pass: The number of products processed in one time by all screw holes divided by the total number of processed products (represents the qualified proportion of products successfully processed on the Y axis) .

Hole Numbers: Accumulate to the total number of holes that have been processed.

Qualified Rate: Accumulate to the pass rate of the hole position which has been processed successfully.

15. Undo Redo Undo and redo to the edition of programming points, up to 20 times, for preventing misuse effectively.

16. Insert In front of the cursor point of the selected insert a blank program point

17. 

Delete the programming point of selected in main page, or in the menu state use for “delete” key. Press the "Delete" button on the preview interface to delete statistics information.

18. 

Jump to the special programming point address by manual input.

19. 

Into Menu 1, for the point of action, displaying as black.

20. 

Into Menu 2, for point of parameters setting, displaying as red.

21. 

Into Menu3, for device of parameters setting and some application operation

22. 

Perform to home.

23. 

Perform step test or screw the hole again where the screw failed.

24. 

Work run or pause.

25. 

Work stop.

26. 

Cursor up a page in main page state, or up a page in menu state.

27. 

Cursor down a page in main page state, or down a page in menu state.

28. 

Cursor up a line in main page state, or up a line in menu state, or up a line in input dialog.

29. 

Cursor down a line in main page state, or down a line in menu state, or down a line in input dialog.

30. 

Screw hole program in main page, or input ‘1’,characters in input dialog.

31. 

Set feeder position in main page, or input ‘2’, ‘abc’ in input dialog.

32. 

Set the speed and length of the screw parameters in main page , or input ‘3’, ‘def’ in input dialog

33. 

Set the time parameters of screw controlling, or input ‘4’, ‘ghi’ in input dialog.

34. 

Set the parameters of the screwdriver in main page, or input ‘5’, ‘jkl’ in input dialog.

35. 

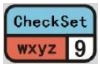
Set array of screw point in main page, or input ‘6’, ‘mno’ in input dialog.

36. 

Set move speed of XYZ axis when working in main page, or input ‘7’, ‘pqrs’ in input dialog.

37. 

Set safe height of Z axis when working in main page, or input ‘8’, ‘tuv’ in input dialog

38. 

Input ‘9’, ‘wxyz’ in input dialog

39. 

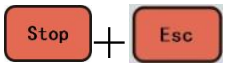
Input ‘0’ in input dialog.

40. 

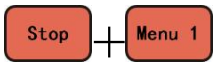
Input blank or decimal point in input dialog.

41. 

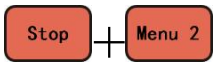
Move to the programming point of cursor selected in main page, or switch IME or input negative value symbol in input dialog.

42. 

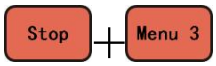
Change Y axis between Y1 and Y2 then display when in double Y mode. The selected Y axis is black, and the unselected Y axis is gray.

43. 

Into menu 4, for bottom layer parameters of the device, suggested not open to users.

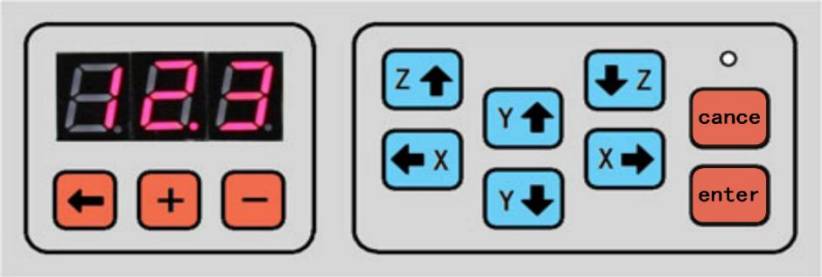
44. 

Into menu 5, for system default parameters, set the initial value of the menu one “Generate the default parameters”.

45. 

Into menu 5, for menu show and hide, suggested not open to users.

2.3 Program selection and adjustment key description



1.  Indicates that the program file 123 is currently selected.
2.  Move the decimal point bit of the current file No., there is '+','-' operation follow with the decimal point bit.
3.  Plus 1 on the bit of decimal point in the File No.
4.  Minus 1 on the bit of decimal point in the File No.
5.  Z axis move up by manual when adjusting.
6.  Z axis move down by manual when adjusting.
7.  Y axis move front by manual when adjusting.
8.  Y axis move back by manual when adjusting.
9.  X axis move left by manual when adjusting.
10.  X axis move right by manual when adjusting.
11.  Enter or confirm the adjustment operation, when enter the adjustment to the screw hole position, LED on the back of the film began flashing, press manual key then press confirm key to finish the operation. When the current cursor on the screw hole, then change the coordinate value by manual. When the current cursor on the parameter of point, then edit the parameters by manual.
12.  Cancel the adjustment operation.

Chapter 3 Shortcut menu description

3.1 

Set the follow parameters of screw working

Driving Speed(mm/s): Means after go to a screw hole, turn on the screwdriver and begin to screw, the speed of Z axis followed down with the screw.

Driving Length(mm): Means after go to a screw hole, turn on the screwdriver and begin to screw, the length of Z axis followed down with the screw, generally set a slightly longer than the length of the screw.

3.2 

Set the delay time parameters

Max Screw Locking Time(s): 1. Torque mode: At this point, the power of the torque signal is turned on, and the screwdriver is worked by the follow-up length. If check no torque signal when the length is over, then the working screw delay is start, check the torque signal within the delay time, if no torque signal neither, display warning “screw loose”. 2. Time mode: At this point, the power of the torque signal is turned off, working screw delay is start and the screwdriver is worked by the follow-up length, when the time is over, then turn off the screwdriver signal, keep going until the length finish. When the length finish, waiting for the working screw delay is over, then the screw work finish.

Dwell Time After Getting Screw(s): Time for delaying after turn on the vacuum valve when going to the feeder to get a screw, to ensure the stability of screw.

Dwell Time After Locking(s): Delay when screw finish, mainly to allow the screwdriver own a stable time to put it up, can also set to ‘0’.

Judge Floating Lock Time: Set ‘0’ to turn off floating alarm. In torque mode, when checked the torque, if screw time less than floating lock time, then alarm “floating lock”. There will display the screw time in the main page, to set the floating lock time conveniently.

3.3 

Set the parameters of screwdriver

Locked-Rotor Detect “ON”, “OFF”: 1.set to “ON”, then worked in torque mode, refer to “working screw delay”. 2.set to “OFF”,then worked in time mode, refer to “working screw delay”.

Alarm “ON”, “OFF”: 1.set to “ON”, alarm “screw loose”, “floating lock” warning. 2. Set to “OFF”, ignore alarm.

3.4 

Set the feeder parameters

Detect Material “ON”,“OFF”: 1.set to “ON”, then every time when feeding will check the feeding signal, if

yes, go to feed, and the signal will disappear. If signal is not disappear, means the screw is not taken, then take it again, until get a screw. 2. Set to “OFF”, go directly to the material, not feeding signal detection.

3.5 

Set the move speed

Move speed of each axis at work. Reference value:600-1000 (mm/s).

3.6 

Set safety height parameter

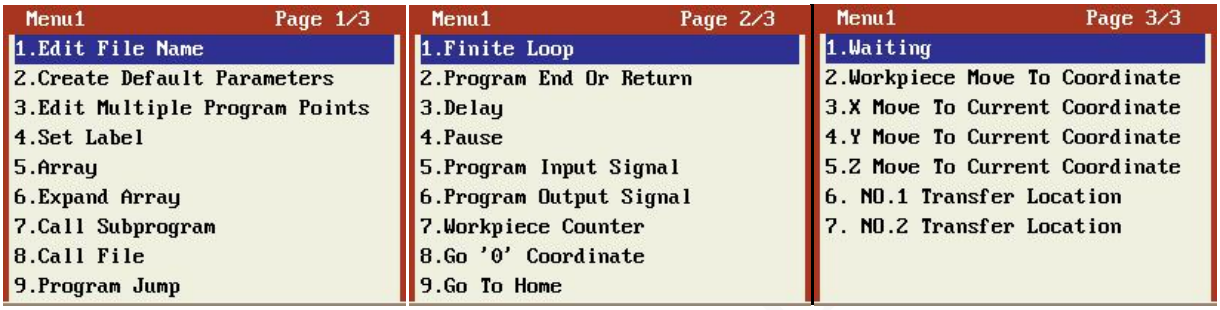
The Height Above The Hole(mm): Z axis height above the screw hole when go to or left the screw hole. To prevent the collision between the screwdriver and work piece on the product.

Height When Get Screw(mm): the safety height when take the screw above the feeder, usually set slightly larger than the nut.

Height After Getting Screw(mm): the safety height after take a screw in the feeder, usually set slightly larger than the length of screw.

Chapter 4 Menu 1

Menu 1 is programming action and frequently-used file operation, the programming point generated by Menu 1 is usually the type of operation, with a black display. Menu 1 contains:



4.1 Page 1 1. Edit File Name

Name the current processing file, press 

to switch IME, and display the IME type on the upper right corner of the screen.

4.2 Page 1 2. Creat Default Parameters

Generate the default parameters before the file:

1. Screwdriving Speed: follow-up speed and length;

2. Time(s) Drive: work screw delay, feed screw delay, finish delay, floating lock time;

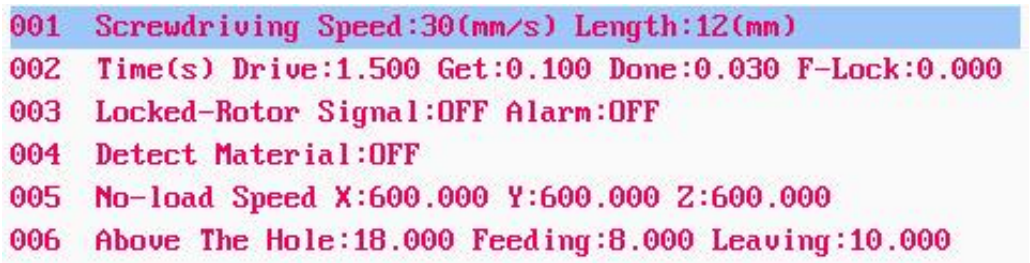
3. Locked-Rotor Signal “ON”,“OFF”, alarm “ON”,“OFF”;

4. Detect Material: material check “ON”, “OFF”;

5. No-load Speed: No-load moving speed of XYZ axis;

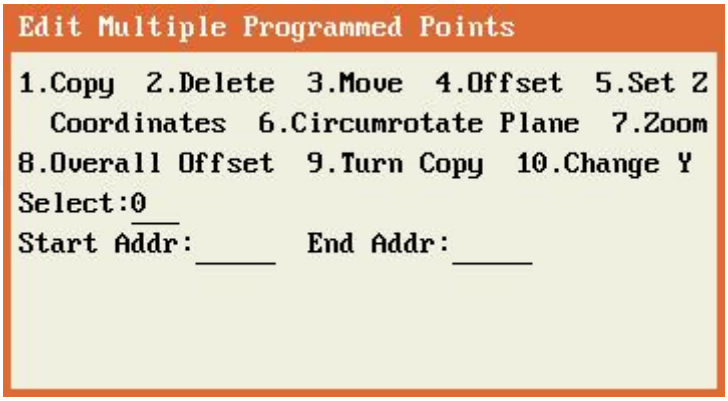
6. Above The Hole : Safety height above the screw hole, Screw feeder safety height, Feeder left safety height.

The value of default parameters can be set in Menu 5(stop + menu2).



4.3 Page 1 3. Edit Multiple Program Points

1. **Copy**:Copy the programming point in the edit range to the specified programming point address.
2. **Delete**: delete the programming point in the edit range.
3. **Move**: move the programming point in the edit range to the specified programming point address. This function mainly used for adjusting the process order of all screws.
4. O**ffset**: Offset the coordinate of the programming point in the edit range.
5. **Set Z Coordinates**: set the Z axis value of the programming point to the same in the edit range.
6. **Circumrotate Plane**: Rotating the programming point in the edit range, mainly used for correcting when the clamp tool is rotated without programming again.
7. **Zoom**: Zoom the graphic of programming point in or out in the edit range, mainly used for correcting when DXF file generating processing file due to the accuracy of the machine caused the deviation by the processing size and the actual size.
8. **Overall offset**: Generally used in the CAD map, the CAD on a point and the corresponding point on the work table to teach offset. The coordinates of the hole of the screw hole in the edit range are carried out accordingly.
9. **Turn Copy:** Rotate and copy the programming point in the edit range to the specified programming point address.
10. **Change Y:** Switch the Y axis of the screw hole to another in edit range.



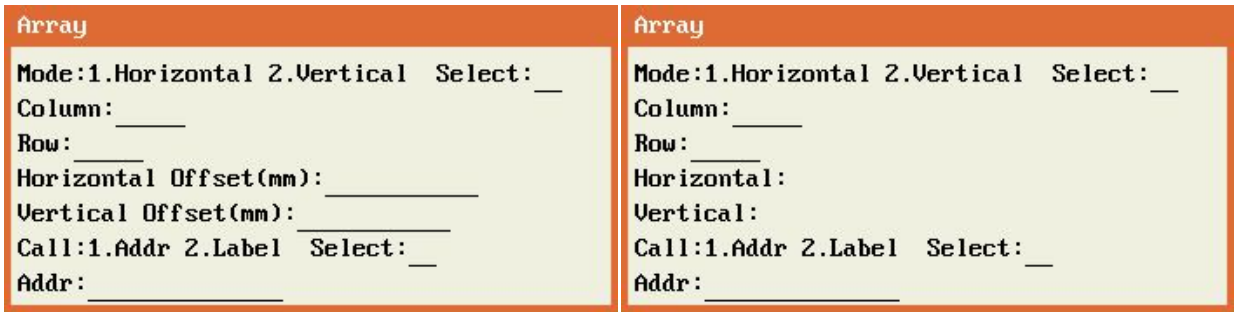
4.4 Page 1 4. Set Label

Labels can not only used to called with array, loop, sub, jump, general input programming, etc. but also be used to program comments to improve the readability of the program.

4.5 Page 1 5. Array

If processing fixture plate placed multiple horizontal and vertical arrangement of the work piece, and horizontal and vertical respectively spacing is consistent then can use array, as long as the series good machining of one work piece, and then use the array can achieve full disk work piece machining, so that programming efficiency is greatly improved. Array programming can be done in the following two ways:

If the fixture plane with the XY plane is consistent with the plane, and horizontal and vertical with the X, Y axis parallel to the direction then can use the first array, also the second ways. If the fixture plane is not consistent with the XY plane, or horizontal, vertical and X, Y axis direction is not parallel to the direction,then can only use the second array methods.



4.6 Page 1 6. Expand Array

Selected the array programming point of the cursor in the main page, performing array deployment can generate programming points with the same effect as the array. It can modify each screw hole when the tool disc is not regular.

4.7 Page 1 7. Call Subprogram

If processing fixture plate placed multiple direction, but there is no rule of the work piece. It is only necessary to programming and machining of one work piece then call the subroutine in each part of the first screw position. It can call the address or the label of the subroutine.

4.8 Page 1 8. Call File

The way to call file is the same to call subroutine, as long as change the called subroutine to a file No., and change the processing programming point from the subroutine to the file.

4.9 Page 1 9. Program Jump

Program jump to special address or label to run when run to the current programming point, usually used to loop.

4.10 Page 2 1. Finite Loop

It is similar to the “Program Jump”, just the “Program Jump” is no limit counts when loop.

4.11 Page 2 2.Program End Or Return

When in a subroutine execution to the programming, the subroutine returns, when not in a subroutine execution to the programming is processing the end of the program. If there are more than two lines of “no

programming point" means the end of the program.

4.12 Page 2 3. Delay

If the program execution to the delay programming point is processed to stop the time delay a certain period of time and then continue to execute the processing point.

4.13 Page 2 4. Pause

If the program execution to the pause programming point, waiting for the run key then continue to execute the processing point. It achieves the "run key to loop". When programming, add pause after the programming point of Y1, add pause after the programming point of Y2, then add jump instruction.

4.14 Page 2 5. Program Input Signal

Programming input signal is when the program execution to the programming of the point, if the values of the input state accord with the specified input signals then program jump to the specified address or label, if not then program continue to execute. Use this function can be achieved with other devices with the work or as a pause key input, etc. (Signal definition: if has the input signal then the signal is defined as the amount of 1, no input signal is defined as the amount of the signal 0).

4.15 Page 2 6. Program Output Signal

When the program is executed to the output signal programming point, then the output signal will output specified value, 1 as DC24V output, 0 as DC0V output. When debugging, we can testing the corresponding output, such as starting the screwdriver, controlling solenoid valve suction, clamping cylinder, etc.

4.16 Page 2 7. Workpiece Counter

When the program is executed, the work piece counter increases the corresponding set value and then compares the value of the counting value to overflow limit, if overflow then stopped, This function usually used to count loop work pieces.

4.17 Page 2 8. Go '0' Coordinate

When execute this command, then the XYZ axis will go back to '0' position as empty move speed, without the action of searching the origin.

4.18 Page 2 9. Go To Home

This current programming point makes the machine back to the origin.

4.19 Page 3 1. Waiting

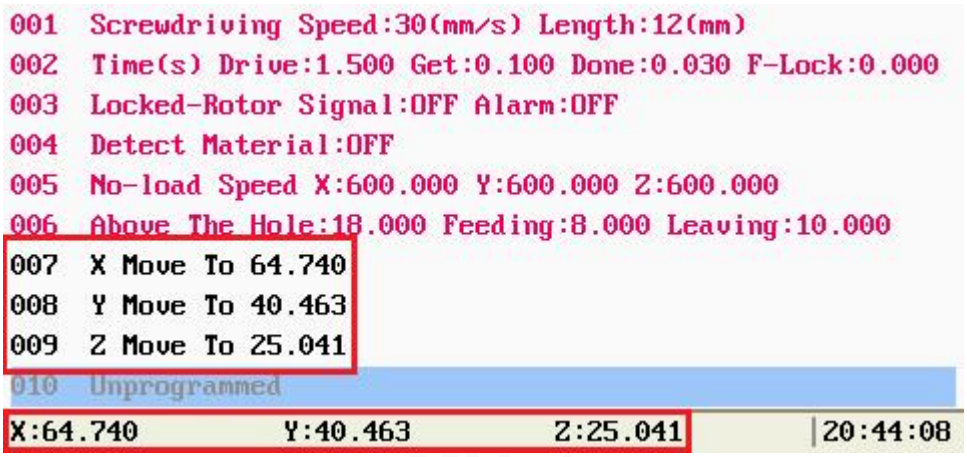
If the program is executed to the waiting programming point, the processing will stop, wait for the "Run" button to be pressed, and then continue to execute the processing programming point.

4.20 Page 3 2. Workpiece Move To Coordinate

When the program is executed to this programming point, the corresponding Y axis automatically goes to the Y axis coordinate recorded by this programming point.

4.21 Page 3 3-5. X、Y、Z Move To Current Coordinate

Inserts the current position of the axis into the program.

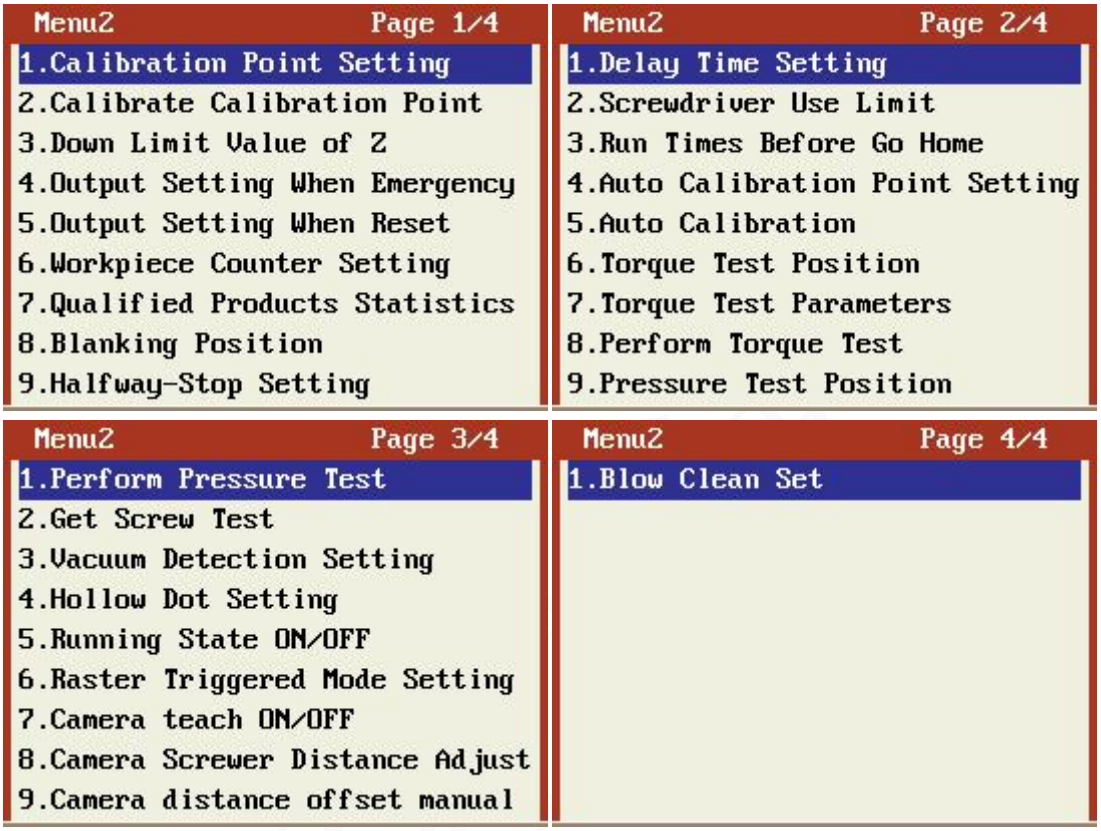


4.22 Page 3 6-7. NO.1/NO.2 Transfer Location

In the second item of the third page of Menu 4, when the number of feeding machine is set to 1, the two parameters will not appear in Menu 1, and only one feeding machine is used for feeding.For example. When the number of feeding machines is set to 2, the two parameters will exist in Menu 1. The feeding machines can be selected according to the process requirements of the Production.

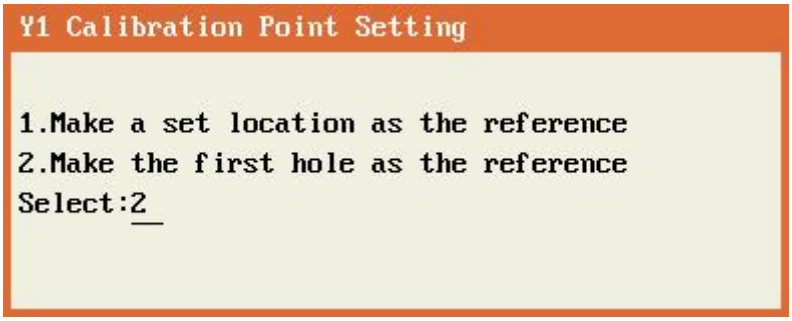
Chapter 5 Menu 2

Menu 2 is mainly for the parameter settings of the programming point, the programming points generated by Menu 2 are shown in dark red. Menu 2 contains:

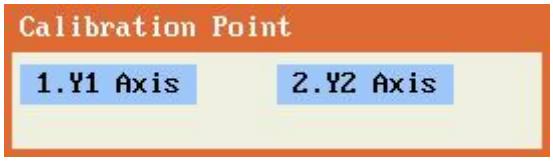


5.1 Page 1 1. Calibration Point Setting

Adjustment point, when there is some processing offset cased by the deviation of screwdriver or fixture, we can use the adjustment point to correct it. There are two ways to set the adjustment point, one is take the first screw hole's coordinate as the adjustment point, the other is set the coordinate by manual, if choose the second one, move the screwdriver to the specified position, then press confirm.



In the dual Y-axis mode, the Y axis should be selected first, and then the coordinates of adjustment point should be set.

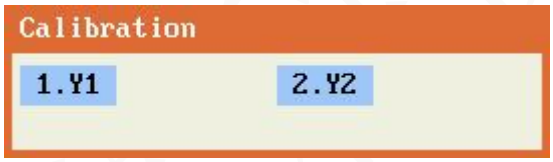


5.2 Page 1 2. Calibrate Calibration Point

When into the calibration menu , the screwdriver move to the adjustment point automatically, then move the screwdriver to the specified coordinate to calibrate, pressing confirm to finish this calibration operation. Then all the processing point will compensate the deviation from the offset of screwdriver to ensure machining accuracy unchanged.

This function can also use the special calibration on the keyboard to operate while no teaching box available, as long as the machine in an idle state, we can press “confirm” key into the calibration operation, at the same time the keyboard mask on the LED will flash, then move the screwdriver to the specified coordinate by manual, press “confirm” again to complete the calibration of the operation, then the LED will extinguish and exit

In the dual Y-axis mode, the Y axis should be selected first, and then the coordinates of adjustment point should be set.

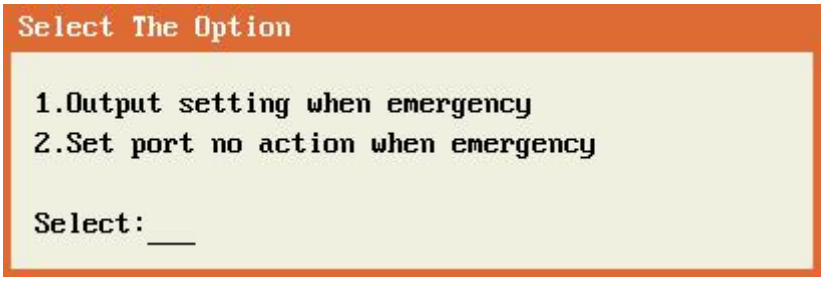


5.3 Page 1 3. Down Limited Value of Z

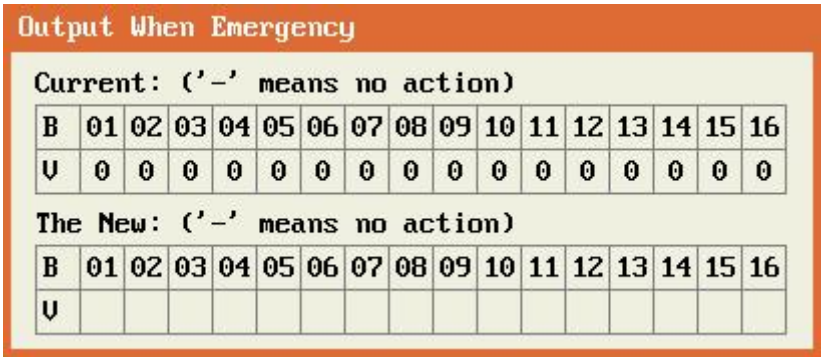
Set this value to limit Z axis down to prevent the screwdriver down to the number of collision work piece or the tool by manual, each processing file has its own Z axis value.

5.4 Page 1 4. Output Setting When Emergency

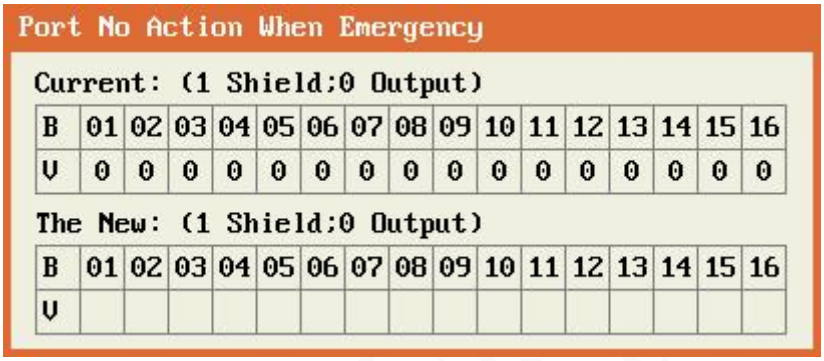
Sets the output signal of the universal output in case of emergency stop.The output port is the leak-opening output. When the output is 0, the output port will not output outward. When the output is 1, the output port will conduct to 0V.



1.Output setting when emergency

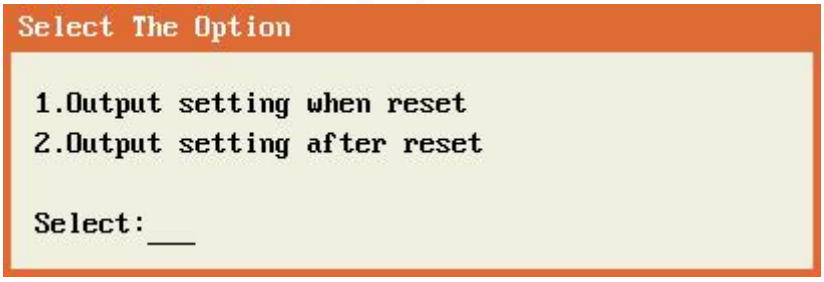


2.Set port no action when emergency

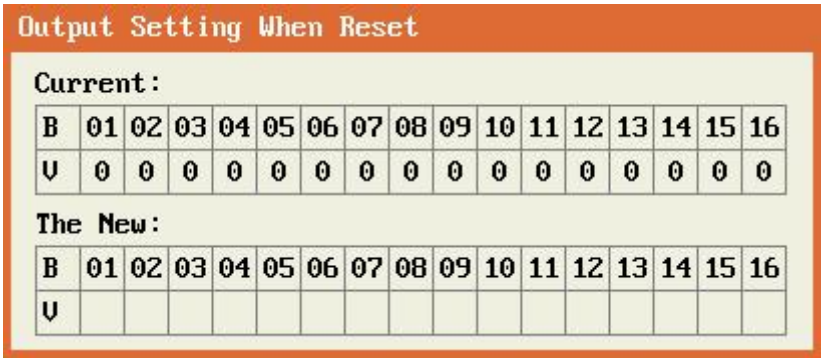


5.5 Page 1 5. Output Setting When Reset

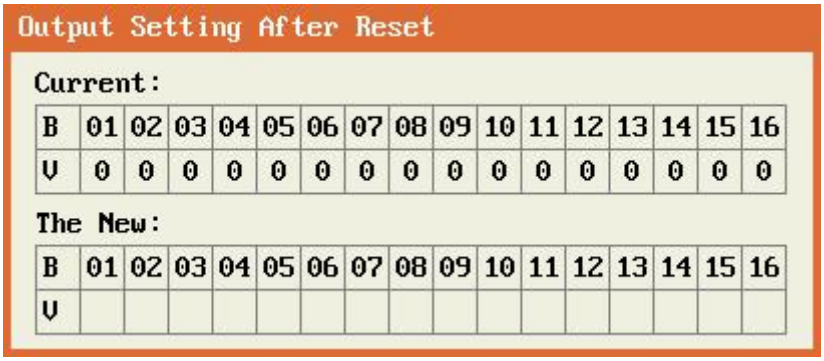
Sets the output signal of the universal output when reset.The output port is the leak-opening output. When the output is 0, the output port will not output outward. When the output is 1, the output port will conduct to 0V



1.Output setting when reset

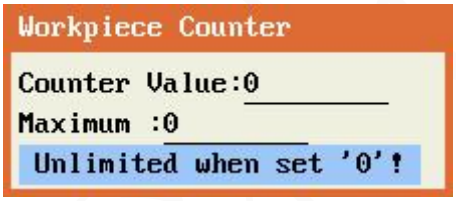


2.Output setting after reset



5.6 Page 1 6. Workpiece Counter Setting

"Counter value" and "Maximum" can be set in the setting of workpiece counter. When the program is running, "counter value" will increase the corresponding set value every time it reaches the programming point of "workpiece counter". If the "countervalue" exceeds the " Maximum ", it will prompt the workpiece count overflow, and the processing can not continue until the counting value is reset.Set the Limit Value to 0 if you do not use the workpiece count limit

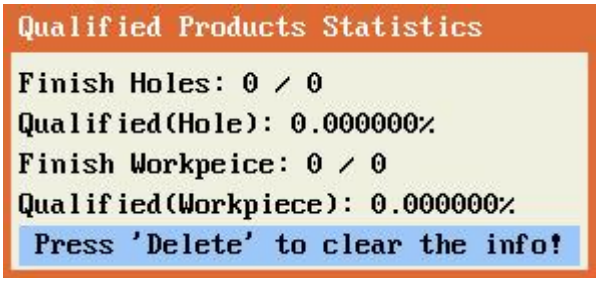


5.7 Page 1 7. Qualified Products Statistics

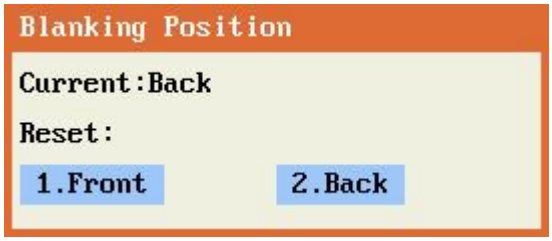
View production status, number of completed screws, qualified rate of screw hole,number of completed products, qualified rate of product.

Qualified(Hole) = number of screw finished / number of all screws.

Qualified(Workpiece) = number of product finished / number of all products.



5.8 Page 1 8. Blanking Position

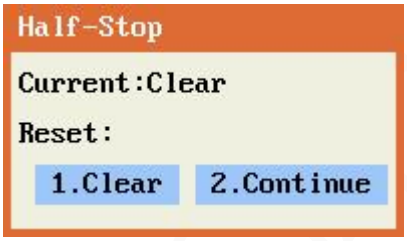


When the product process finished, then get out the position of product.

Front: set Y axis end as the get product position;

Back: set Y axis start as the get product position.

5.9 Page 1 9. Halfway-Stop Setting

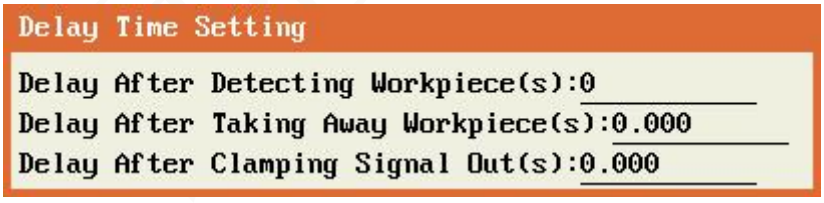


When press the stop in product processing,

Continue: next time start, continue to process at the stop position last time;

Clear: next time start, process at the first screw hole.

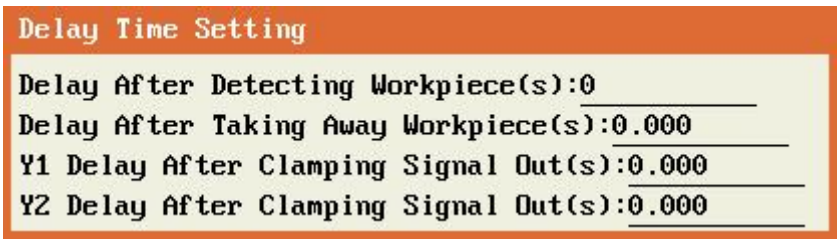
5.10 Page 2 1. Delay Time Setting



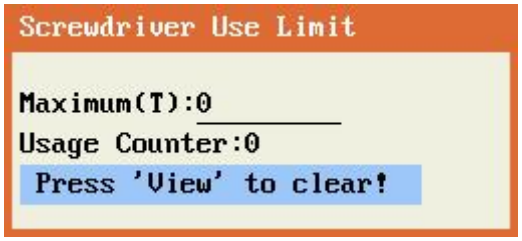
Delay After Detecting Workpiece(s): after check the product, delay a period of time, then perform next action.

Delay After Taking Away Workpiece(s): perform the next action after the product removed at the location of product and delay a period of time.

Delay After Clamping Signal Out(s)： After the product is clamped, it is necessary to delay for a period before executing the next action. In double Y-axis mode, it is necessary to set the delay after clamping output signal of Y1 and Y2 axis respectively, as shown in the figure below:

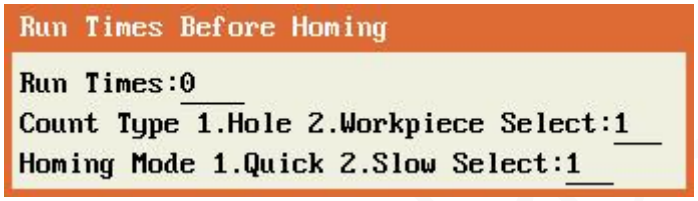


5.11 Page 2 2. Screwdriver Use Limit



Set the maximum of screwdriver, each finish a screw, the number of screw driver using count will add 1, when the using count reach the number of maximum, then prompt changing the head of screwdriver. If no limit count, set the maximum as 0.

5.12 Page 2 3. Run Times Before Go Home

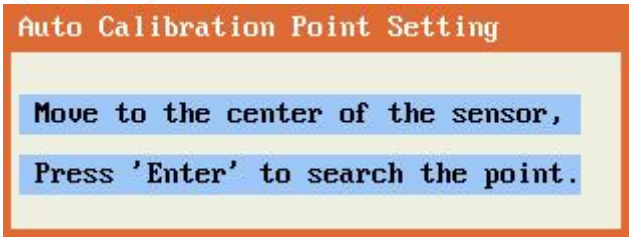


Count type: 1. Hole, if the number of processing reach to the number of screw hole ever been set, go back to the origin, then continue.

2. Workpiece, if the number of processing reach to the number of product ever been set, go back to the origin, if in the loop mode, then continue.

Homing mode: 1.Quick, go home with no-load moving speed; 2.Slow, Use the speed set in "Go Home Speed Setting" in point 3 on Menu 4 - Page 2.

5.13 Page 2 4. Auto Calibration Point Setting



Move the screwdriver to the center of automatic check sensor, with a moderate height. After press the “confirm”, the screwdriver will search the XYZ axis sensor trigger point from all directions, then get the coordinate of the screwdriver check point.

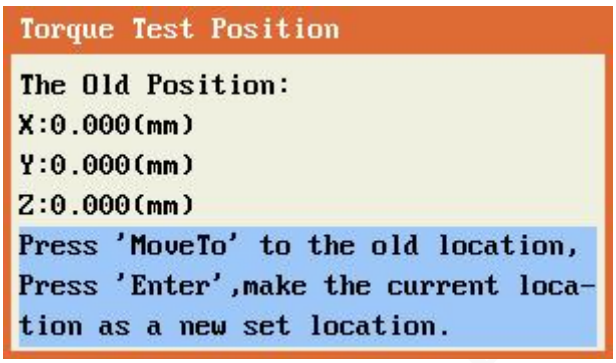
5.14 Page 2 5. Auto Calibration

Check the adjustment point automatically, move the screwdriver to the last adjustment point, then search the XYZ axis sensor trigger point from all directions, to get the new adjustment point. By comparing the last and the

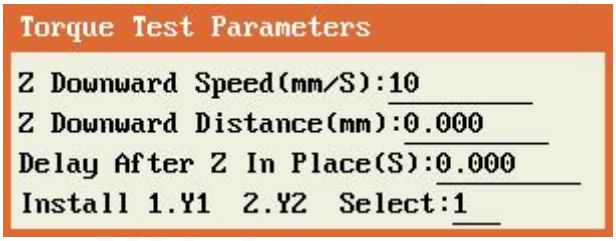
new coordinates of the adjustment point, generating the coordinate offset of XYZ axis. Then all the screw hole's coordinates move a distance according to the offset to get the new coordinate of programming point.

5.15 Page 2 6. Torque Test Position

Set the torque test position of the screw driver.



5.16 Page 2 7. Torque Test Parameters

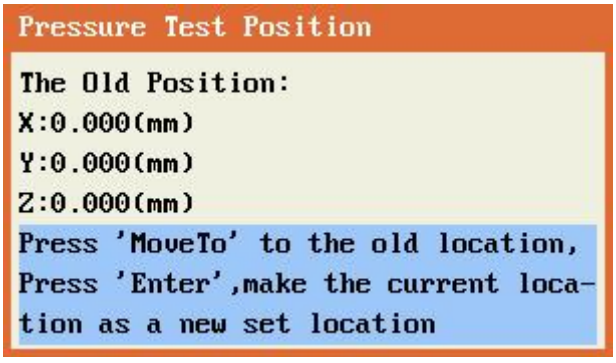


During the torque testing, the torque test of Z-axis shall be carried out according to the speed, distance and delay after Z-axis in place, and the workbench on which the torque detection device is installed shall be set.

5.17 Page 2 8. Perform Torque Test

Perform torque test of screw driver.

5.18 Page 2 9. Pressure Test Position



Set the position of pressure test.

5.19 Page 3 1. Perform Pressure Test

Perform pressure test of screw driver.

5.20 Page 3 2. Get Screw Test

Test getting screw, turn on suction, screwdriver, go to the position of feeder, stop at the top of the feeder, press stop, then turn off the suction and screwdriver.

5.21 Page 3 3. Vacuum Detection Setting

Select whether to enable vacuum detection.

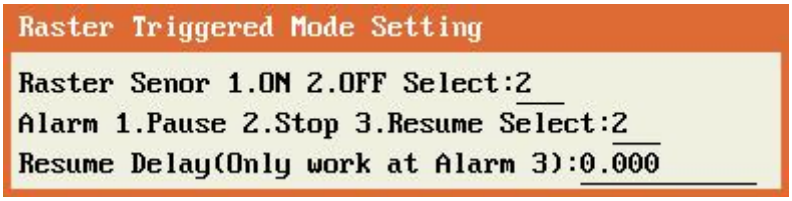
5.22 Page 3 4. Hollow Dot Setting

Hollow dot is the same as the screw hole site to go to the point coordinates, but do not do other actions, generally used to do other functions in addition to the screw.

5.23 Page 3 5. Running State On/Off

When the running state display function is turned on, various running states in the running process will be displayed in the upper right corner of the screen of the teach box, which is convenient to check when debugging; It can be closed if not needed.

5.24 Page 3 6. Raster Triggered Mode Setting



In the process of screw working, in order to prevent the collision of objects and people, in the process of running or returning to the origin, when the raster protection is triggered, it will respond in accordance with the raster trigger mode setting.

When the raster trigger mode is set to 2, the specific time for delayed recovery can be set in "Menu 4- Page 3 -6. Raster sensor settings".

Chapter 6 Menu 3

Menu 3 is mainly machine setting or menu operation, no programming point generated. Menu 3 contains:

6.1 Page 1 1. Move To Designated Location

When input the specific coordinate and press “Enter” key after enter the menu, the machine will move to the coordinate just inputted.

6.2 Page 1 2. Copy Processing Files

This function can storage in U Disk or teach box and copy files between each machine, when there are several machines process the same file, we can just program in one screw machine and copy it to others. The teach box copying applies to the field using, and the U Disk copying can not only between screw machines, but also storage in the computer as backup. File copying operation contains:

1. From the machine to the teach box

This operation copy the current processing file to the teach box.

2. From the machine to Udisk

This operation is to copy the currently processing file to the root directory of U disk in the "螺丝机-螺丝程序" folder, The extension of the stored file is "DJF". (Note: U disk must be formatted to FAT32 format)

3. From the teach box to the machine

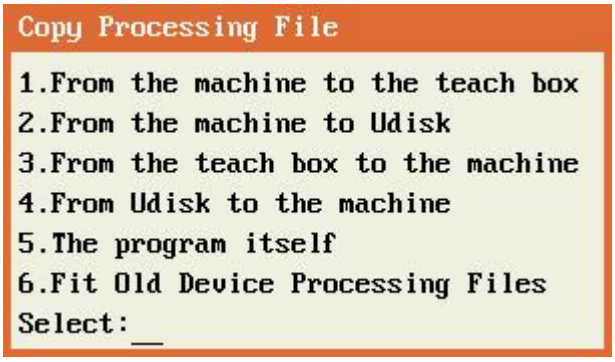
This operation copy the storage file in the teach box to replace the current processing file in the screw machine.

4. From Udisk to the machine

Copy the screw processing file stored in the "螺丝机-螺丝程序" folder in the root directory of U disk and replace the currently processing file of the screw machine. (Note: U disk must be formatted to FAT32 format)

5. The program itself

This operation copy files with different file No. to replace, mainly used to processing files backup.



6.3 Page 1 3. DXF Files Conversion

Save the AutoCAD graphics file as AutoCAD 2010 DXF format, stored the file in “螺丝机\DXF 文件” folder, then operating this menu to convert graphics files into processing files.

6.4 Page 1 4. Lock/Unlock Current File

When the file unlock, icon display  in the status bar, meanwhile the parameters of current file and machine all can be modified; when the file lock, icon display  in the status bar, meanwhile the current file can’t be modified , but not the parameters of the machine.

6.5 Page 1 5. Lock/Unlock Machine

When in unlock states, the parameters of machine can be modified, whether the file is locked is up to the file lock/unlock setting; when in lock states, icon display  in the status bar, meanwhile all the parameters of file and machine are locked.

6.6 Page 1 6. File Lock Password Setting

This menu is used to set the password for the “Page 1 4.lock/unlock for current file”

6.7 Page 1 7. Machine Lock Password Setting

This menu is used to set the password for the “Page 1 5. Advanced lock/unlock machine”

6.8 Page 1 8. Edit Input Port Name

The default name of programmable universal input port is “通用输入 01”--“通用输入 16”, to improve the readability of the program, each programmable universal input port can be named according to the function of the application, so that the programming is more convenient.

6.9 Page 1 9. Edit Output Port Name

The default name of programmable universal output port is “通用输出 01”--“通用输出 16”, to improve the readability of the program, each programmable universal output port can be named according to the function of the application, so that the programming is more convenient.

6.10 Page 2 1. Key Tone Setting

This menu can set whether the key voice of teach box is on or off.

6.11 Page 2 2. Lock/Unlock Small Keypad

Small keyboard means special keyboard for the check adjustment point, this menu usually used to prevent misuse with locking this keyboard and taking the teach box away.

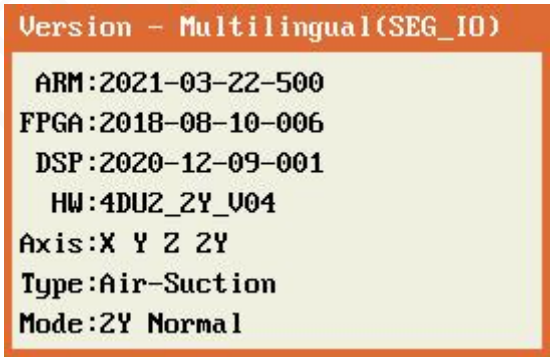
6.12 Page 2 3. View & Delete Files

Because the processing file is so many (1000 files), it’s terrible to open and search file one by one, so we can use this function for tabbed browsing, find the number of file we wanted then open it, also can press “delete” key to delete the selected file.

6.13 Page 2 4. Device Info

Display the device information, such as machine number,etc.

6.14 Page 2 5. Program Version Info



Displays program version information, as shown in the figure above:

ARM：2021, March, 22nd, version number 500;

DSP：2020, December, 9h, version number 001;

FPGA：2018, August, 10th, version number 006.

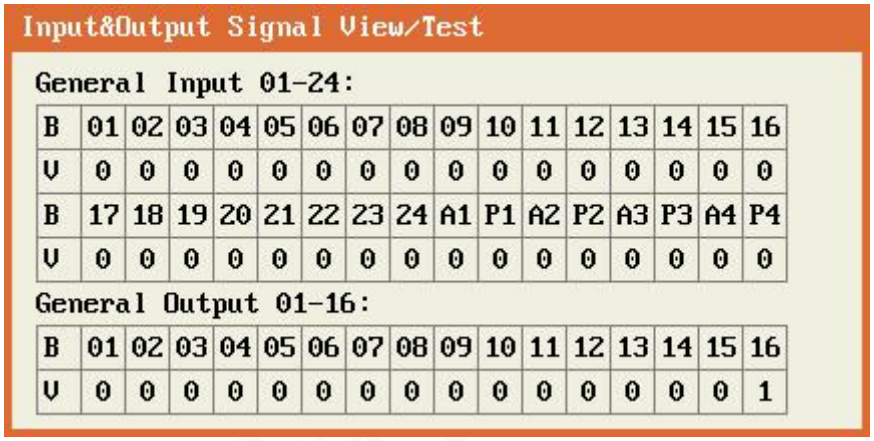
HW：4DU2_2Y_V04 hardware version number

Axis : X Y Z 2Y axis information

6.15 Page 2 6. Application Update

As long as put the application program file into U Disk of FAT32 format with folder called “螺丝机/升级文件’，enter the menu and update the program after insert the U Disk. If the U Disk can identify correct, icon  will display at the right in status bar.

6.16 Page 2 7. View & Test Input Signals



The 01-04 of "general input" are the origin signals of X, Y, Z and A/Y2 axes respectively. The value is' 1 'when there is an input signal and' 0 'when there is no input signal.

The 05-16 of "general input" are programmable quick input port. The value is' 1 'when there is an input signal and' 0 'when there is no input signal.

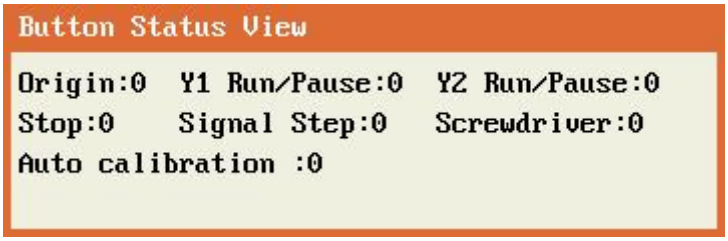
The 17-24 of "general input" are programmable general input port. The value is' 1 'when there is an input signal and' 0 'when there is no input signal.

"A1, A2, A3 and A4" correspond to the driver alarm signal points of X, Y, Z and A/Y2 axes respectively. The value is' 1 'when there is an input signal and' 0 'when there is no input signal.

"P1, P2, P3, P4" correspond to the motor in place signal points of X, Y, Z, A/Y2 axis respectively. The value is' 1 'when there is an input signal and' 0 'when there is no input signal.

The 01-16 of " general output" can be tested. When the input value is "1", the corresponding output LED is on, the test port is normal; otherwise, it is abnormal.When the input value is "0", the corresponding output LED is off, the test port is normal, otherwise it is not normal.

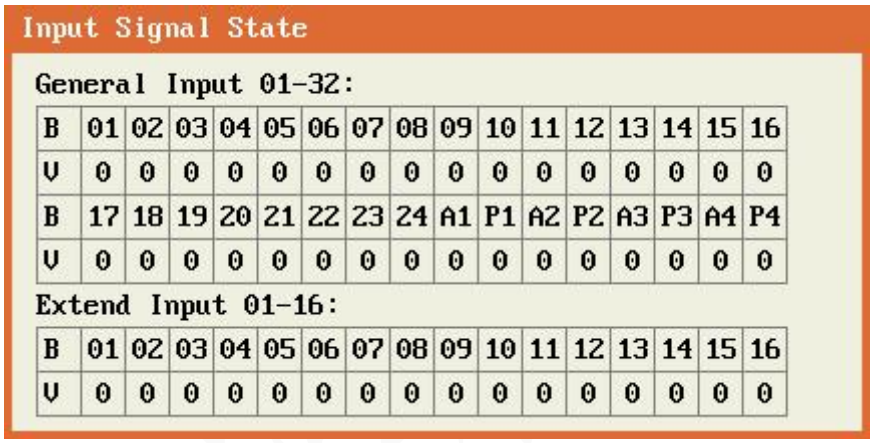
6.17 Page 2 8. View Buttons State



View the input state of function key, when no key means states is 0, when check key down means states is 1.

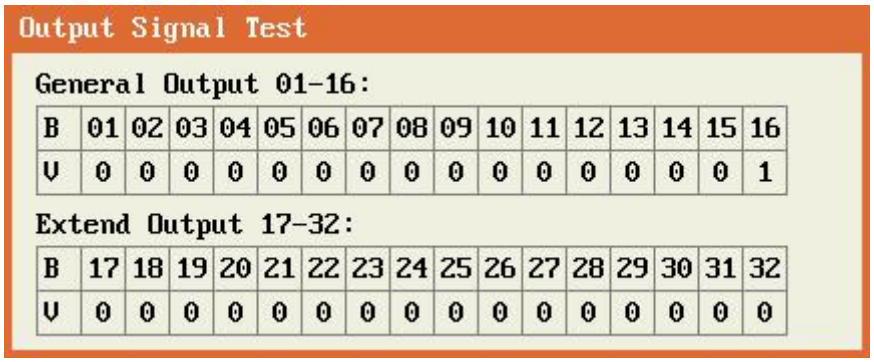
6.18 Page 2 9. View Express Input Signals

Under this interface, you can view the signal status of the extended input port and the general input port



6.19 Page 3 1. View Express Output Signals

Under this interface, the extended output and general output can be tested.



6.20 Page 3 2. View System Configuration

Under this interface, system configuration information can be viewed. Press "PgUp, PgDn" button to view up and down. The contents can be viewed as shown below:

NO.1 Feed-P : 0 PO-Time :0.00	Suc-Cyl-P : 0
NO.1 Feed-P : 0 PB-Time :0.00	Y1 Ve-Cyl-P : 0 Dn-Time :0.80
NO.2 Feed-P : 0 PO-Time :0.00	Y1 Suc-Cyl-P: 0
NO.2 Feed-P : 0 PB-Time :0.00	Y1 Ho-Cyl-P : 0 PO-Time :0.80
Y1 Clamp-P : 0 Cla-Time:0.00	Y2 Ve-Cyl-P : 0 Dn-Time :0.80
Y2 Clamp-P : 0 Cla-Time:0.00	Y2 Suc-Cyl-P: 0
Screwdrive-P: 0	Y2 Ho-Cyl-P : 0 PO-Time :0.80
Suc-Screw-P : 0 Clo-Time:0.00	Red Light-P : 0
Dn-Cyl-P : 0	Gre Light-P : 0
Clear Signal: 0	

Raster-In-P : 0 N-O	Screw-InP : 0 N-O
Y1 WP-Det-P : 0 N-O	Vacuum-Det : 0 N-O
Y1 WP-Det-EP: 0	Depth-Det : 0
Y2 WP-Det-P : 0 N-O	Cyl-Origin : 0 N-O
Y2 WP-Det-EP: 0	Y1 Ve-UCyl-P: 0
Y1 Clamp-In : 0 N-O	Y1 Ho-PCyl-P: 0
Y1 Clamp-EIn: 0	Y1 Suc-Det : 0
Y2 Clamp-In : 0 N-O	Y2 Ve-UCyl-P: 0
Y2 Clamp-EIn: 0	Y2 Ho-PCyl-P: 0
Driver-LR-In: 0 N-O	Y2 Suc-Det : 0

Drive Sp:0 Drive Len:0	Vacuum Det:OFF
Drive-Ti:1.00 Get-Ti:0.20	No-Load Sp:10.00 Go direct
Float-Ti:0.00 Finish-Ti:0.00	Single Y
Locked-R:OFF Alarm:ON	Det :0.00 Get:0.00
Material Det:ON	Detect Mode:Auto
Sp X:600 Y:600 Z:600	Screwdrive:Over Feeder
StA X:6000 Y:6000 Z:4000	Det Mode:Scan No reset
SpA X:6000 Y:6000 Z:4000	Axis X after homing:Feed-P
Safe Ht :0.00 0.00 0.00	Wait Ti Over Feeder:0.00
Take WP Away:Back	Atuo Take Away WP:OFF

6.21 Page 3 3. Teaching Mode Setting

1、 Teach Box: Move the axis to the target position. After entering this mode, the icon  will display at the upper right corner of the screen.

2、 Manual teaching: Move the axis to the target position by hand, After entering this mode, the icon  will display at the upper right corner of the screen.

Note: Teach Box mode and manual teaching mode cannot be used at the same time.

6.22 Page 3 4. Run From Current Location

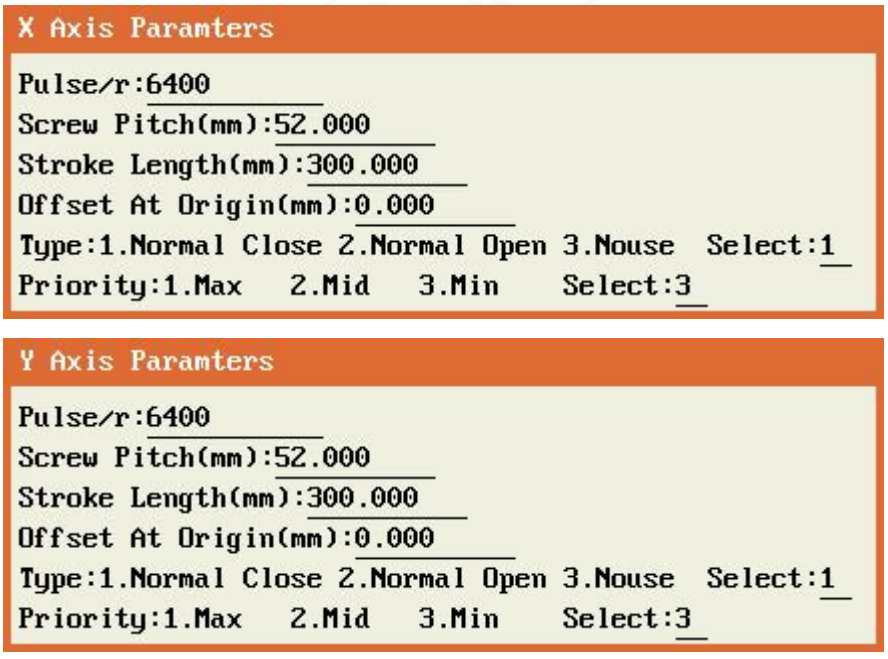
This function usually used to work the leftover screw at the specified screw hole when there are some little errors in the process midway.

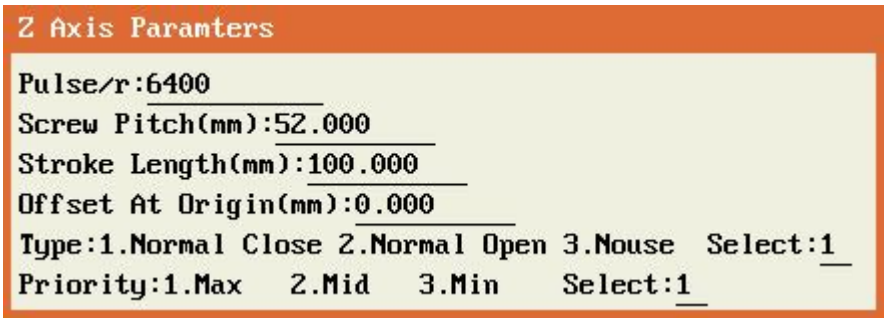
Chapter 7 Menu 4

Press “Stop” + “Menu1” into Menu 4, Menu 4 is the menu for manufactor to set parameters of machine, not recommend opening for users. Menu 4 contains:

7.1 Page 1 1-3. Set X/Y/Z Axis Parameters

The motor shaft parameter setting options are shown below:





Pulse/r: means the number of pulses for the driver motor per revolution, or the fine fraction of driver motor.

Screw Pitch: means the run distance for the driver motor per revolution, or the circumference of the belt pulley or the pitch of lead screw.

Stroke Length: The longest distance the axis can move.

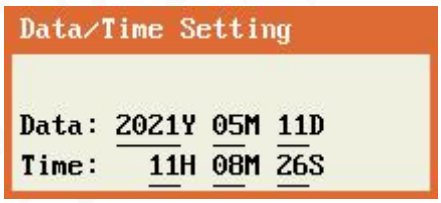
Offset At Origin: Home offset can be 0 or others, as well as offset the error value as coordinate 0 after capture the home position.

Type: 1.normal Close 2.Normal Open, Close if capture sensor output low voltage when motor shaft don't trigger the origin, and the opposite is open.

Priority: Set the order of axises when going home.

7.2 Page 1 4. Data And Time Setting

Set the date or time of the system.

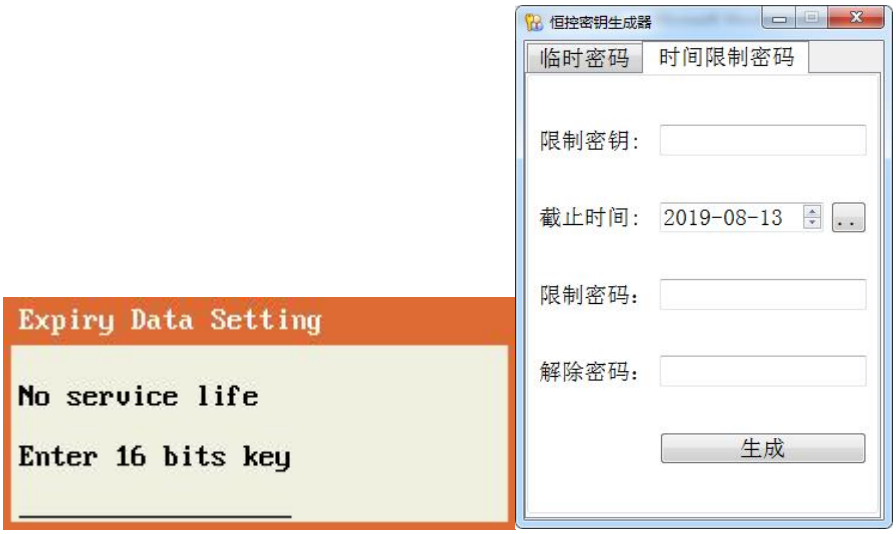


7.3 Page 1 5. Serect Key Setting

Before set the use limit time, set the password first.

7.4 Page 1 6. Limit Service Time Setting

Before using this function, you must first "set serect key", and then use the "恒控密钥生成器" to generate a 16-bit password.



7.5 Page 1 7. Edit Device Name

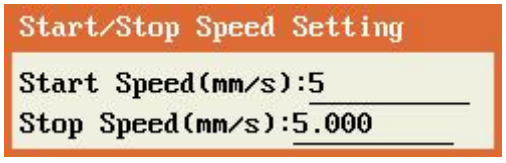
The name of device edited will display at “menu 3, page 2, 4.device information”.

7.6 Page 1 8. Edit Company Name

The name of company edited will display at “menu 3, page 2, 4.device information”.

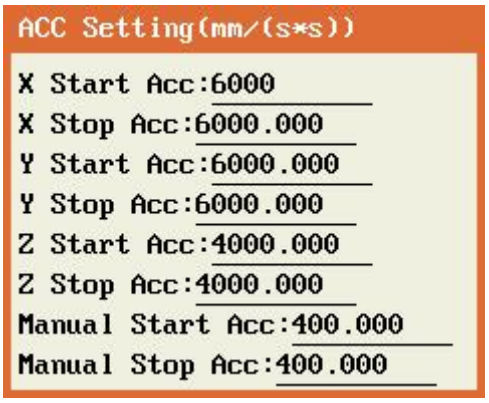
7.7 Page 1 9. Start/Stop Speed Setting

The motor has a process of acceleration and deceleration in motor control applications when running, to improve work efficiency, start/stop speed can set neither 0 nor too large, the greater the load, the smaller the start/stop speed, or it will cause the loss of step or mechanical noise, general recommendations in 20 mm/s.



7.8 Page 2 1. ACC Setting

Various acceleration contains:

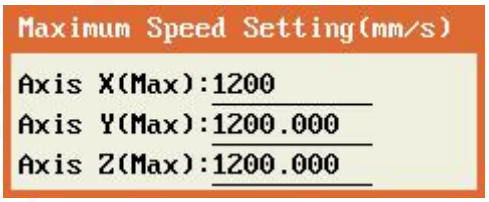


The manual move speed can set a little smaller in actual use, generally between 100-500, manual moving acceleration is set a little smaller to have an obvious start acceleration process in manual operation, it is easy to move a short distance when it is moving at a high speed, satisfied the speed and short distance requirements.

The control card support asymmetric acceleration and deceleration, start acceleration and stop acceleration can be set to different values, the actual application of the general will be set larger to stop the acceleration than the start acceleration. The acceleration of the size of the setting must be according to the motor drive capacity, load size, mechanical properties, etc. taking not lose step, shaking not big as the standard.

7.9 Page 2 2. Maximum Speed Setting

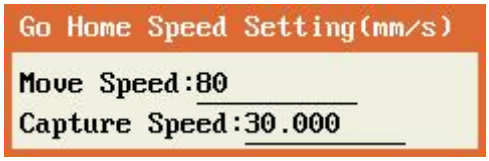
Setting the maximum value allowed by each axis speed in user programming, this will prevent the user from setting a speed that is greater than the speed of the machine design requirements, so that prevent the lose of step.



7.10 Page 2 3. Go Home Speed Setting

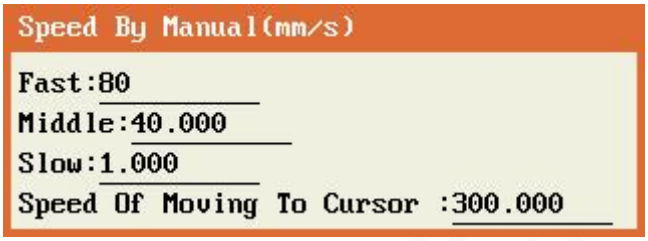
Origin capture is record the position of motor shaft when it trigger the origin signal, in order to be in the same position every time, it must be triggered in the same direction every time, so we must move to the correct direction first then perform origin capture when the position of motor shaft is not at the direction of origin capture direction.

“move speed” is the speed that the motor shaft move from error direction to the direction of origin capture, this speed can be upper, generally set range as 50-150mm/s, “capture speed” is the speed that motor shaft move to trigger the origin signal, to improve the accuracy, this speed should not be too high, generally set range as 20-60mm/s.



7.11 Page 2 4. Manual Mode Speed

Manual movement speed is high, medium and low speed of three, press “speed” can cycle switch. Generally set high speed as 80mm/s, middle speed as 40mm/s, low speed as 1mm/s. Move to Cursor Speed corresponds to the Move to Cursor speed setting on the key "MoveTo".



7.12 Page 2 5. Update Pinyin Input Method

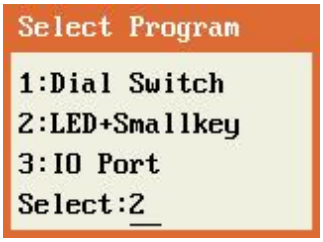
Pinyin IME use the GB2312 library, almost 7000 commonly used Chinese characters, usually the factor has been updated the Pinyin IME, so it’s no need to perform this action.

7.13 Page 2 6. Update Boot Screen

This feature is not supported currently.

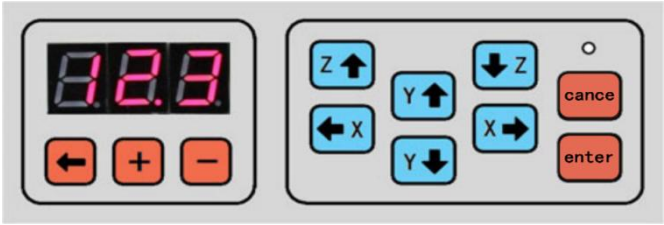
7.14 Page 2 7. Program Selection Mode

There are several ways to open processing files program:



1.Dial switch: reserved.

2.LED+smallkey: Use LED small panel to open the processing file, the physical picture of the button is shown as the following figure



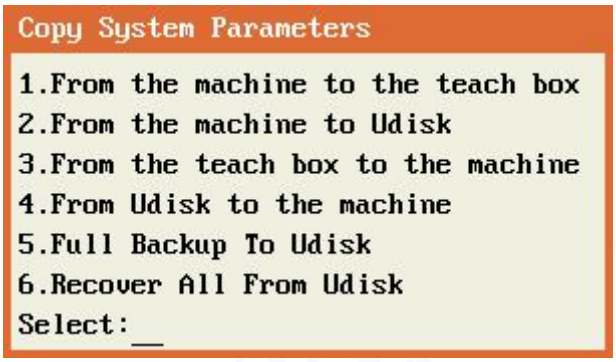
3.IO port: This function is used when processing files are opened through a PLC device and is used in conjunction with the "File selection port setting" function in Menu 4

7.15 Page 2 8. Copy System Parameters File

The function of this menu is copying the system parameters from one machine to teach box or U Disk and then copy it from teach box or U Disk to other same size machines, no need to set them one by one.

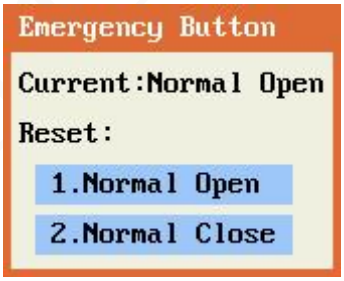
If save to the U Disk, must create the folder called “螺丝机-配置文件” first, and the suffix of this file must be “CFG”. (Note : U Disk must be formatted as FAT32)

The contents of the copy include the machine parameters and the default values of the factory settings.



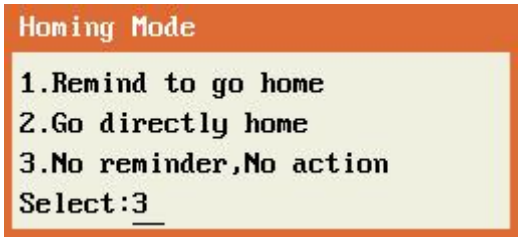
7.16 Page 2 9. Emergency Stop Button Mode

When prompt “emergency” press “cancel” to enter the menu of set emergency mode, so we can modify it quickly if the emergency stop switch damaged or need to modify the emergency mode.



7.17 Page 3 1. Set Homing Mode After Startup

1. Remind to go home: prompt to go back to the origin when the machine power on, press “home” to perform this action.
2. Go directly home: go directly to the origin when the machine power on.
3. No reminder, No action: must press “home” to perform this action after the machine power on.

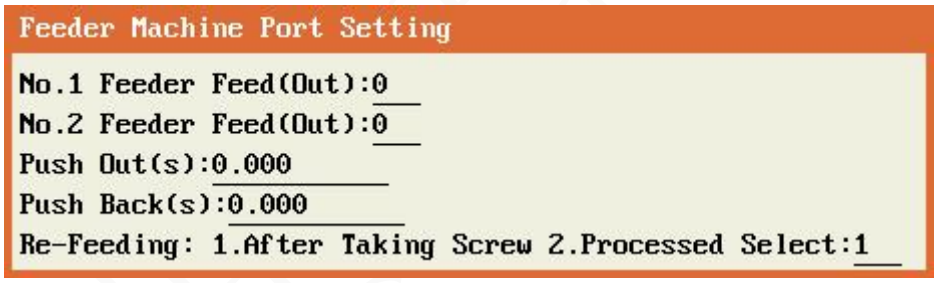


7.18 Page 3 2. Set Feeder Machine Number

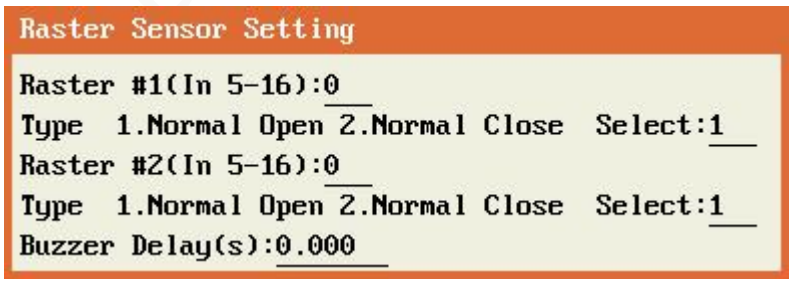
We can set the number of feeder as one or two, when set as two,we can feed screw at the special feeder in the program point. This operation can not only meet the two kinds of the same size of the different length of the screw processing, but also be processed in the short path.

7.19 Page 3 3. Feeder Machine Port Setting

When the cylinder is separated from the screw, please set the port according to the connection. There are few customs using this feeding mode.



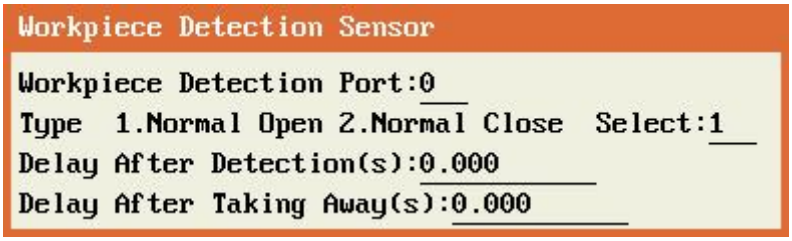
7.20 Page 3 4. Raster Sensor Setting



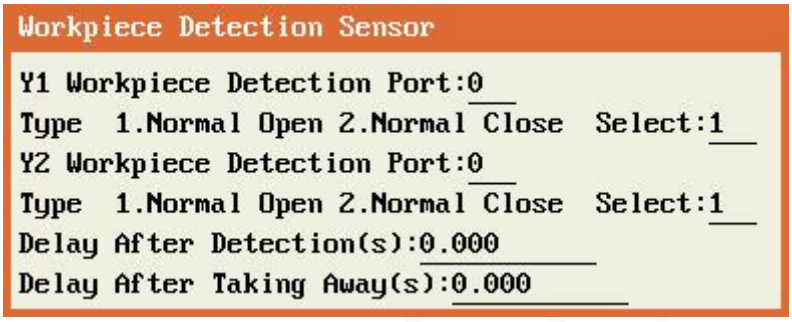
In the process of screw working, in order to prevent the collision of objects and people, in the process of running or returning to the origin, it can be detected by raster signal. The triggering mode of raster signal can be found in "Menu 2-Page 3-6", " Raster triggered mode setting". When the raster input signal is set to 0, the raster protection function is invalid.

7.21 Page 3 5. Workpiece Detection Sensor

Single Y-axis mode is shown below:



The dual Y-axis mode is shown below:



Workpiece Detection Port: input port of checking whether the product is OK, when set as 0, then the port function is shield.

Type: signal type of checking the work piece.

Delay After Detection(s): checked the product after a period of time delay and then perform the next action, can also be set as '0'.

Delay After Taking Away(s): processing finish and get out the product when check the signal after a period of time delay and then perform the next action, can also be set as '0'.

7.22 Page 3 6. Extension Detection Sensor

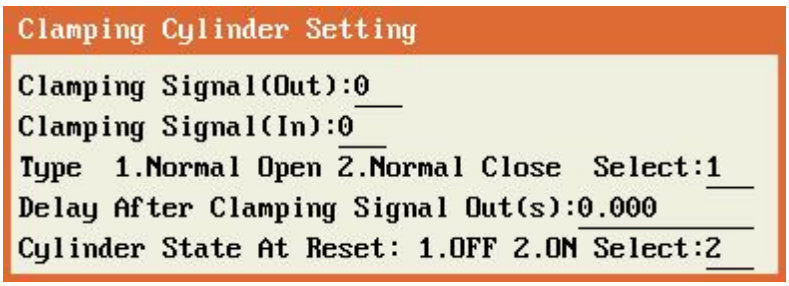
Single Y-axis mode is shown below:

The dual Y-axis mode is shown below:

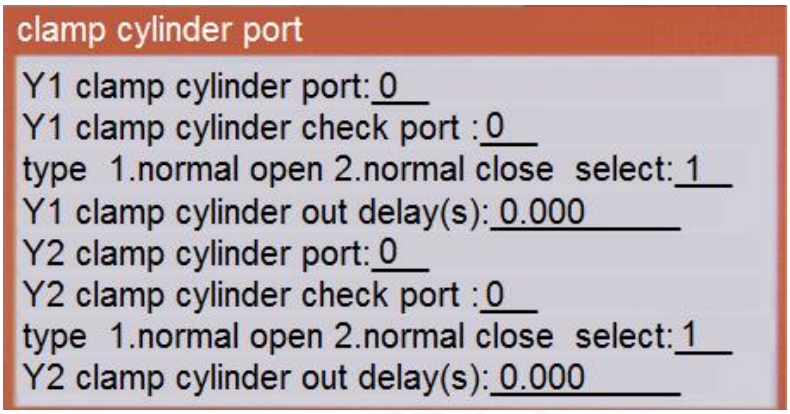
Some occasions, there are two products in one workbench, and they all have the sensor check. Only the two sensors capture the product at the same time, then the product put OK and perform the next step. The two sensors are respectively corresponding to the work piece checking port and the work piece checking expansion port.

7.23 Page 3 7. Clamping Cylinder Setting

Single Y-axis mode is shown below:



The dual Y-axis mode is shown below:



Clamp cylinder port: output port of solenoid valve for driving and clamping cylinder of work piece, when set as 0, then the port function is shield.

Clamp cylinder check port: input port of clamping sensor (It is usually pressure sensor or photoelectric sensor), when set as 0, then the port function is shield. When the clamping sensor has an input signal, if the input signal is not checked after clamp the cylinder, it will release the cylinder and clamp until check the input signal, then clamp again.

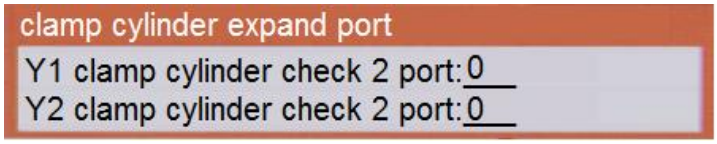
Signal type: Signal type of clamping cylinder in sensor.

Clamp cylinder out delay: Drive clamping work piece cylinder solenoid valve after a period of time delay and then perform the next action, can also be set as '0'.

7.24 Page 3 8. Extension Clamping Cylinder

Single Y-axis mode is shown below:

The dual Y-axis mode is shown below:



Some occasions, there are two products in one workbench, and they all have the controlling of clamping cylinder with input signal check. Only the two cylinder clamp the product at the same time, then the product clamped OK and perform the next step. The two sensors are respectively corresponding to the clamping input port and the clamping input expansion port.

7.25 Page 3 9. Screwdriving Port Setting 1

Locked-Rotor Signal(In): A port of locked-rotor signal, corresponding to the actual wiring.

Type 1.Normal open 2.Normal close: The type of locked-rotor signal.

Detection Type 1. Capture 2. Scanning: the style of main board checking locked-rotor signal, capture, means to catch a rising edge or falling edge. Scanning, means to check a signal ON or OFF. Setting according to the type of locked-rotor signal. If the locked-rotor signal is an instantaneous signal, then set to capture, if it is a holding signal, then set to scan. Some of the screwdriver will have a very short interfering signal, the use of scanning mode can filter out the interference signal.

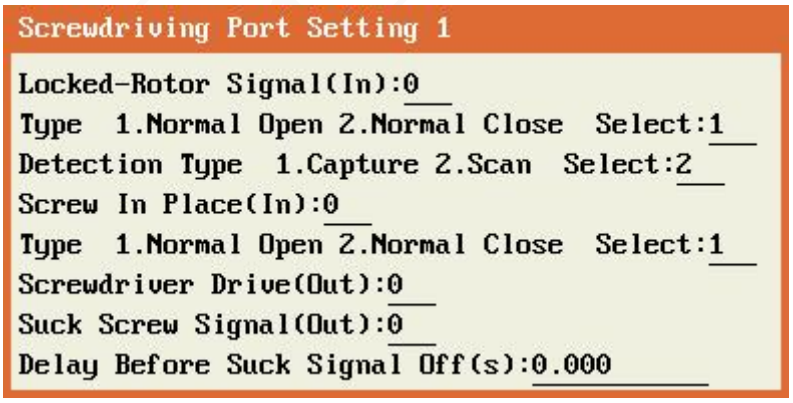
Screw In Place: feeder, the port of response the signal of screw, corresponding to the actual wiring.

Type 1.Normal open 2.Normal close: the type of material feeding signal.

Screwdriver Drive(Out): set the screwdriver control port, corresponding to the actual wiring.

Suck Screw Signal(Out): set the port of suction solenoid valve, corresponding to the actual wiring.

Delay Before Suck Signal Off (s): Starting from the screw working to start the time, after the setting time, the suction closed. If the setting time is larger than the screw process time, then screw finished and the suction is closed. If set as 0, then close the suction after screw finished.



7.26 Page 4 1. Screwdriving Port Setting 2

Up/Down cylinder signal (output): the port of down cylinder, when the cylinder is at the top of Z axis, corresponding to the actual wiring. If there is no cylinder, set as 0.

Vacuum check (input):set the port of screwdriver vacuum check, corresponding to the actual wiring. If not use, set as 0. When turn on the vacuum check, the screwdriver will check vacuum signal at the top of screw hole, if it is not normal, it will produce a vacuum alarm.

Type 1.ON 2. OFF: the type of vacuum signal.

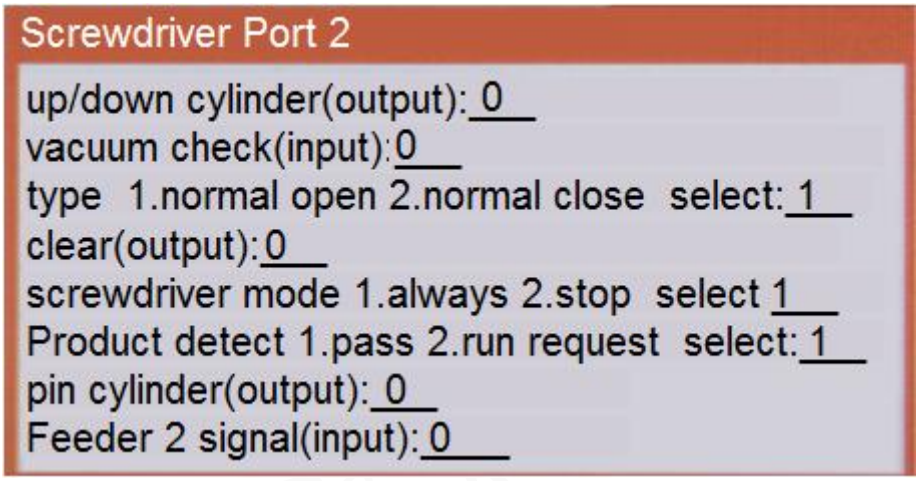
Clear(Output): Set the port of clear, corresponding to the actual wiring. If not use, set as 0.

Screwdriver mode 1.always 2.stop: set as 1, then the screwdriver will turn on always, if set as 2 ,then the screwdriver only turn in at getting screw and working screw, but not moving the screwdriver.

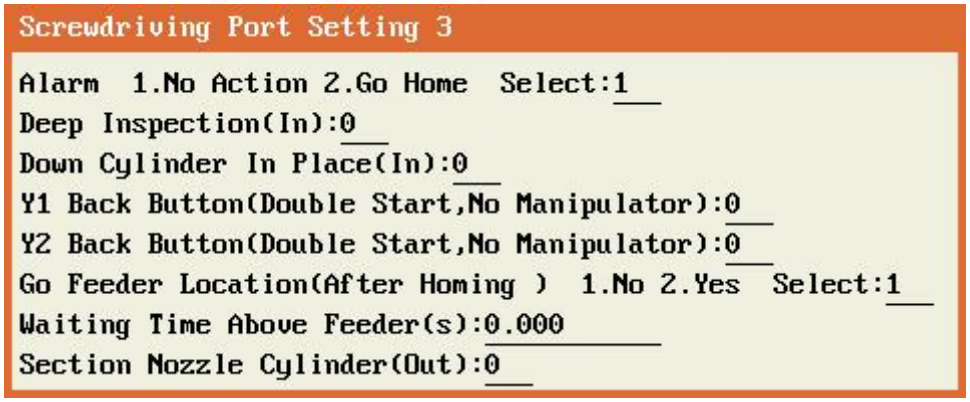
Product detect 1. Pass 2.run request: set as 1, then the machine will work if check the product put OK signal, if set as 2, then after check the product put OK signal, press Run button to start.

Pin cylinder(Output): Set the port of pin cylinder, corresponding to the actual wiring. If not use, set as 0.

Feeder 2 signal (input): only when the number of feeder is 2, this menu will be showed. Feeder 2, the port of response the signal of screw, corresponding to the actual wiring.



7.27 Page 4 2. Screwdriving Port Setting 3



Alarm 1.No action 2.Go home: If set to 1, the origin will not be returned when the alarm of floating lock or sliding screw is detected; if set to 2, the origin will be returned once after the alarm is detected

Deep Inspection(In): When an external depth detection sensor is installed to detect the depth of the screw, the relevant input port can be set according to the actual wiring.

Down Cylinder In Place(In): Used to test whether the downward cylinder returns to the original position. If the cylinder does not return to the proper position after the screw is set, the Z axis cannot be lifted and moved. Set to 0 means that this function is shielded.

Y1/Y2 Back Button(Double Start,No Manipulator): This function is in the dual start mode, after the

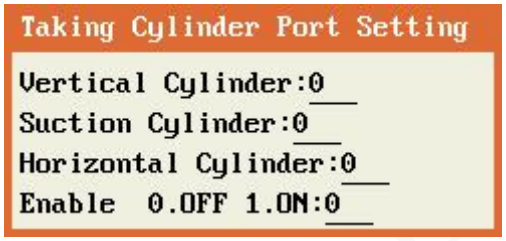
completion of processing products without manipulator material set up an output signal to use material.

Go Feeder Location(After Homing)：Set whether the X axis after returning to the origin goes to the specified material taking position and stands by.

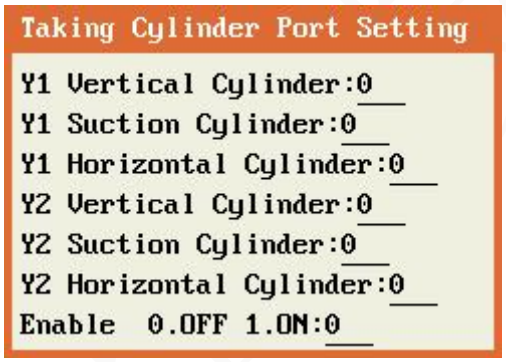
Waiting Time Above Feeder(s): Set the waiting time above the material taking.

7.28 Page 4 3. Taking Cylinder Port Setting

Single Y-axis mode is shown below:



The dual Y-axis mode is shown below:



This function is mainly used for getting out the finished product automatically.

Y1 Vertical Cylinder: set the port of Y1 vertical cylinder, corresponding to the actual wiring.

Y1 Suction Cylinder: set the port of Y1 suction cylinder, corresponding to the actual wiring.

Y1 Horizontal Cylinder: set the port of Y1 horizontal cylinder, corresponding to the actual wiring.

Y2 Vertical Cylinder: set the port of Y2 vertical cylinder, corresponding to the actual wiring.

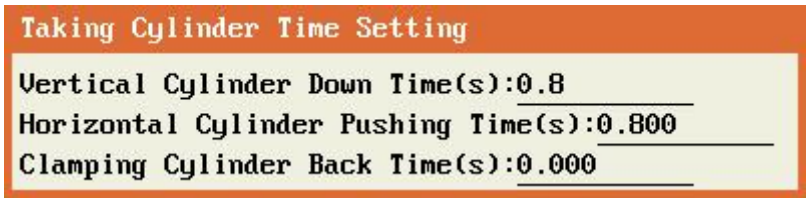
Y2 Suction Cylinder: set the port of Y2 suction cylinder, corresponding to the actual wiring.

Y2 Horizontal Cylinder: set the port of Y2 horizontal cylinder, corresponding to the actual wiring.

When the product processing finished , Y axis go to the position, vertical cylinder down, suction cylinder open, vertical cylinder up, horizontal cylinder push, suction cylinder release, product fall into the product line, horizontal cylinder retract.

7.29 Page 4 4. Taking Cylinder Time Setting

Single Y-axis mode is shown below:

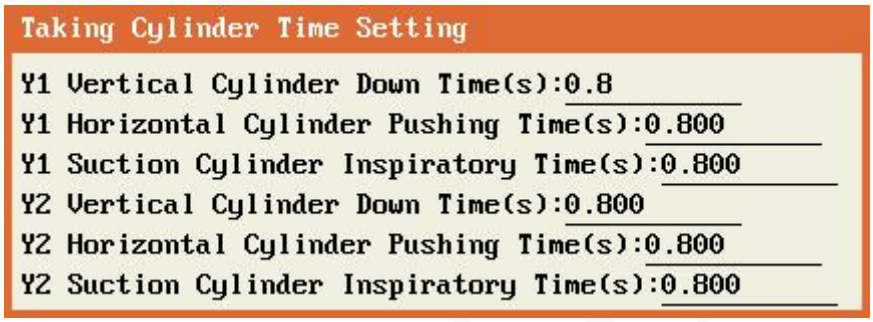


Vertical Cylinder Down Time(s): time for vertical solenoid valve output.

Horizontal Cylinder Pushing Time(s): time for horizontal solenoid valve output.

Clamping Cylinder Back Time(s): The time required to clamp or release the cylinder.

The dual Y-axis mode is shown below:



Y1 Certical Cylinder Down Time: time for Y1 vertical solenoid valve output.

Y1 Horizontal Cylinder Pushing Time: time for Y1 horizontal solenoid valve output.

Y1 Suction Cylinder Inspiratory Time(s): time for Y1 suction solenoid valve output.

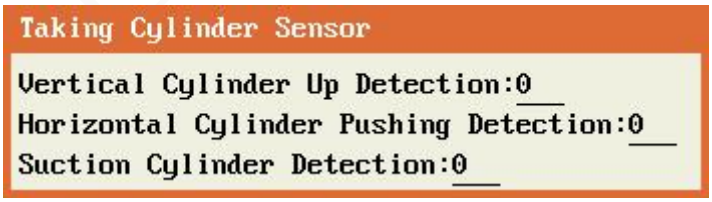
Y2 Vertical Cylinder Down time: Time for Y1 vertical solenoid valve output.

Y2 Horizontal Cylinder Pushing Time: time for Y1 horizontal solenoid valve output.

Y2 Suction Cylinder Inspiratory Time(s): time for Y1 suction solenoid valve output.

7.30 Page 4 5. Taking Cylinder Sensor

Single Y-axis mode is shown below:

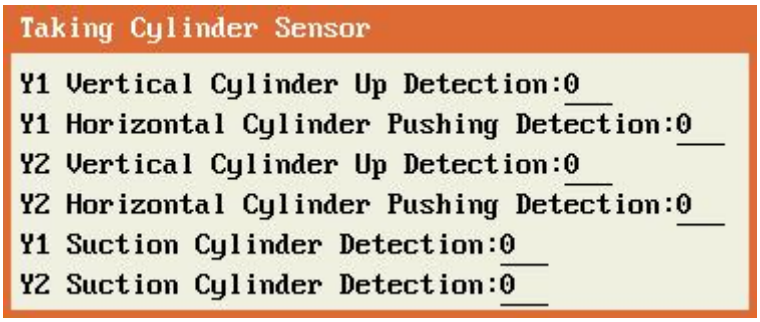


Vertical Cylinder Up Detection: set port for vertical cylinder up checking, corresponding to the actual wiring.

Horizontal Cylinder Pushing Detection: set port for horizontal cylinder push checking,corresponding to the actual wiring.

Suction Cylinder Detection: set port for suction cylinder checking, corresponding to the actual wiring.

The dual Y-axis mode is shown below:



Y1 Certical Cylinder Up Detection: set port for Y1 axis vertical cylinder up checking, corresponding to the actual wiring.

Y1 Horizontal Cylinder Push Detection: set port for Y1 axis horizontal cylinder push checking,corresponding to the actual wiring.

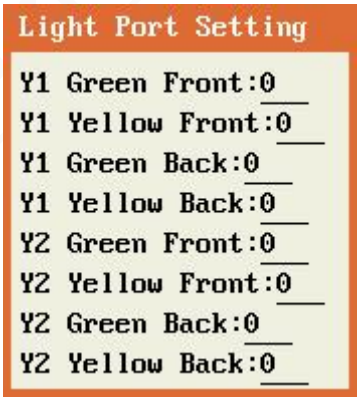
Y2 Certical Cylinder Up Detection: set port for Y2 axis vertical cylinder up checking, corresponding to the actual wiring.

Y2 Horizontal Cylinder Push Detection: set port for Y2 axis horizontal cylinder push checking, corresponding to the actual wiring.

Y1 Suction Cylinder Detection: set port for Y1 axis suction cylinder checking, corresponding to the actual wiring.

Y2 Suction Cylinder Detection: set port for Y2 axis suction cylinder checking, corresponding to the actual wiring.

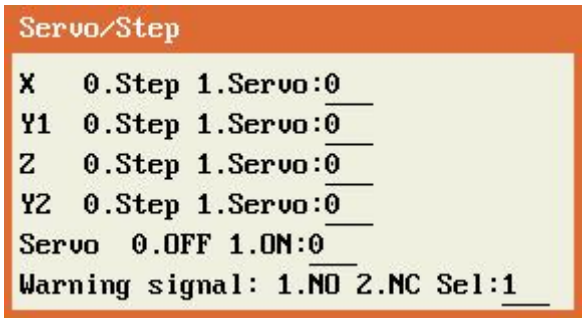
7.31 Page 4 6. Light Port Setting



Front and rear double color led port setup.

Wait for feeding, front yellow led flashes. After the material OK, front green light. After the completion of the processing, if there is NG hole, then back yellow light, if the product is OK, then the green light both front and back.

7.32 Page 4 7. Motor Drive Mode



X 0.step 1.servo: set X axis as step or servo.

Y1 0.step 1.servo: set Y1 axis as step or servo.

Z 0.step 1.servo: set Z axis as step or servo.

Y2 0.step 1.servo: set Y2 axis as step or servo.

Servo 0.close 1.open: the total switch, when select 1, the above four settings are valid, otherwise closed, the above four is no effect. When select servo, it will check servo alarm, when back to the origin, it will output the clean signal of servo alarm. Connection reference the definition of motor shaft connection.

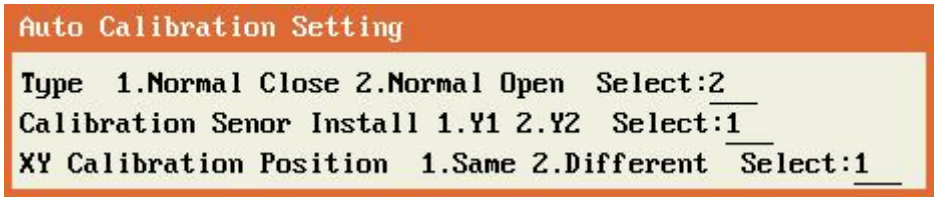
7.33 Page 4 8. Axis X,Y Moving Mode

If X,Y move directions are opposite of the key when move the workbench by manual, we can set these parameters below:

Left, front::  coordinate reduce,  coordinate increase.  coordinate reduce,  coordinate increase.

Right, back:  coordinate reduce,  coordinate increase.  coordinate reduce,  coordinate increase.

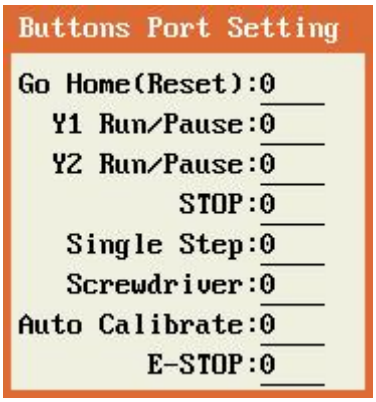
7.34 Page 4 9. Auto Calibration Port



Automatic calibration sensor setting: can search X and Y detection in one location at the same time.X and Y can also be detected at different positions.The Z axis will select one of the sensors to detect.

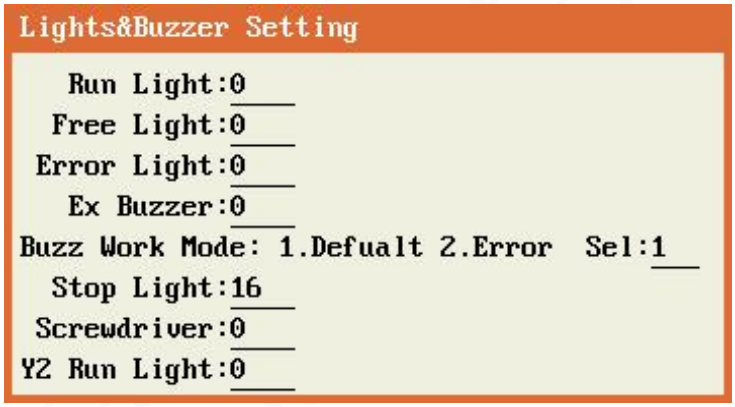
7.35 Page 5 1. Buttons Port Setting

In this interface, the input port used for keys can be set, as shown below:



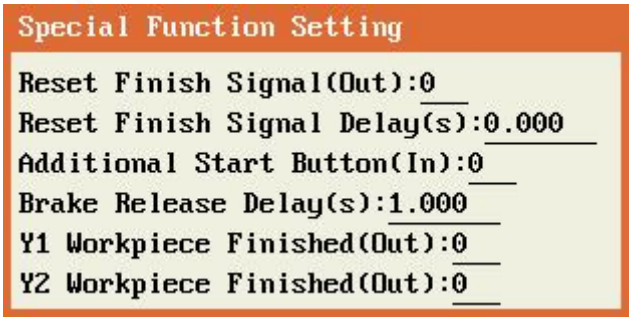
7.36 Page 5 2. Lights&Buzzer Setting

Light and buzzer output port can be set in this interface, as shown in the figure below:



7.37 Page 5 3. Special Function Setting

Special function output can be set in this interface, as shown in the figure below:

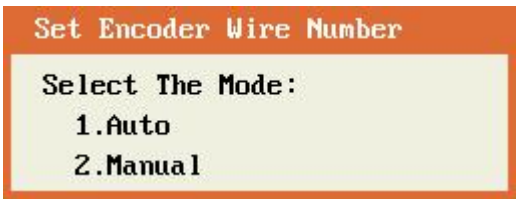


7.38 Page 5 4. Set Screensaver

This feature is not currently supported.

7.39 Page 5 5. Pulse Number Of Drag Mode

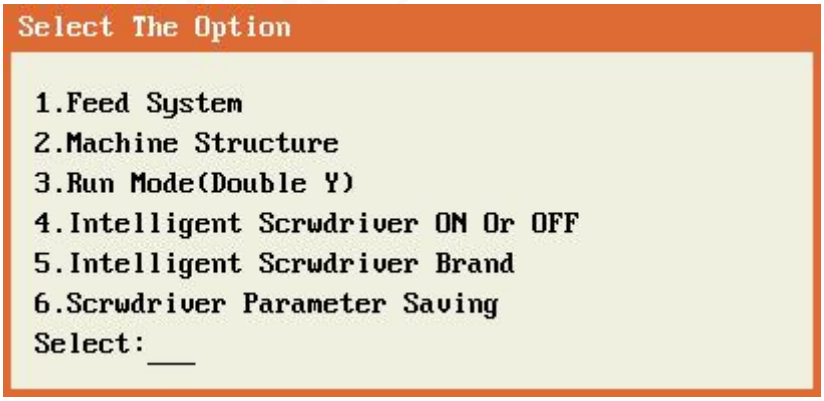
Set the number of encoder lines in this interface before using drag and drop mode.



1.Auto: Select "1" and press "OK", the system will automatically set the number of encoder lines of the shaft. After setting, the system will prompt you to press "OK" to confirm the completion of setting. The interface setting process is shown below

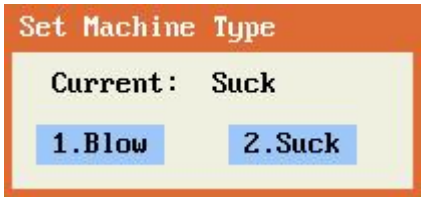
2.Manual: Select "2" to enter the manual setting of the encoder line number of the shaft. The interface is shown in the figure below

7.40 Page 5 6. Machine Type Setting



1. Feed system

Set the suction way of the screw, the first type is blow type, the second type is suction type



1. Suck: When the machine type is suction type, the position of the feeding coordinate needs to be set because

it needs to go to the feeding point to get the material.

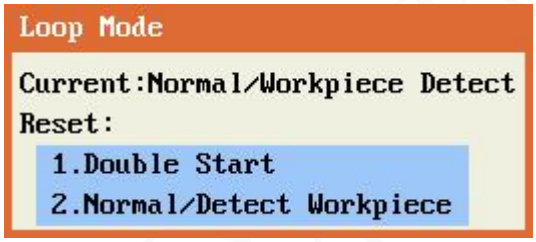
2. Blow: When the machine type is selected as blow type, the coordinate position of idle resting point should be set because there is no need to take material at the feeding point.

2.Machine structure

Y axis number and platform mode can be selected in this interface

3.Run mode(double Y)

In this interface, you can choose the cycle mode of double Y mode.



1.Double Start: Press the globle start key, put the product, press Y1 to start, Y1 clamping cylinder work, after clamping is completed, wait for processing when the batch head is idle.Press Y2 to start, the Y2 clamping cylinder works, and wait for processing when the batch head is idle after clamping

2.Normal/Detect Workpiece: Press the globle start key, put the product, Y1 workpiece detection is OK, Y1 clamping cylinder work, after clamping is completed, wait for batch head idle processing.Y2 workpiece detection is OK, Y2 clamping cylinder works, after clamping is completed, wait for processing when the batch head is idle.

4.Intelligent screwdriver on or off

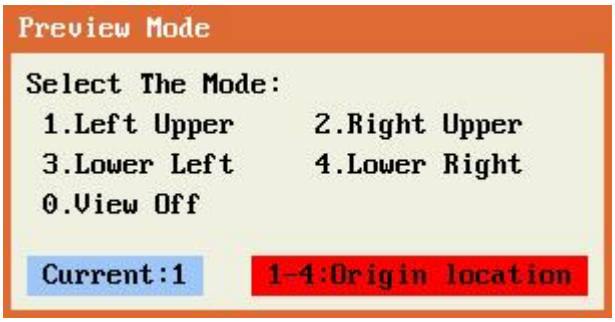
Under this interface, you can set whether to turn on the function of intelligent screwdriver.

5.Intelligent screwdriver brand

This feature is not currently supported.

7.41 Page 5 7. Preview Mode Setting

In this interface you can set the way of preview according to the actual application.



7.42 Page 5 8. File Selection Port Setting

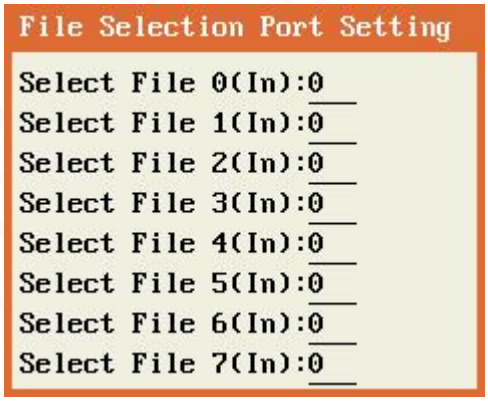
This function is assumed that the user wants to use PLC to select the processing file, parameters can be set through the following interface to select the processing file.

Note:

1. Before using this function, you need to select point 3 "IO Port" in Menu 4 “Program select mode”, and then set this option "File selection port setting";

2. The file is encoded in 8421;

3. The encoding is sorted from top to bottom.



7.43 Page 5 9. Language

7.44 Page 6 1. Transfer Location Parameters

After getting the screw, go to this position first and then go to the hole to do the screw working. It is usually

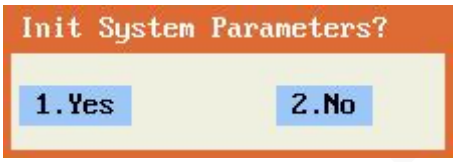
used to dip glue or set something on the screw.

7.45 Page 6 2. Set Intelligent Screw Driver

This feature is not currently supported.

7.46 Page 6 3. Initialize System Parameters

Initialize the parameters of system, all the parameters will revert to initialization settings after initialized. Before this operation, please remember all port settings, parameters of screwdriver, some import parameters, etc. After initialization, set them one by one.

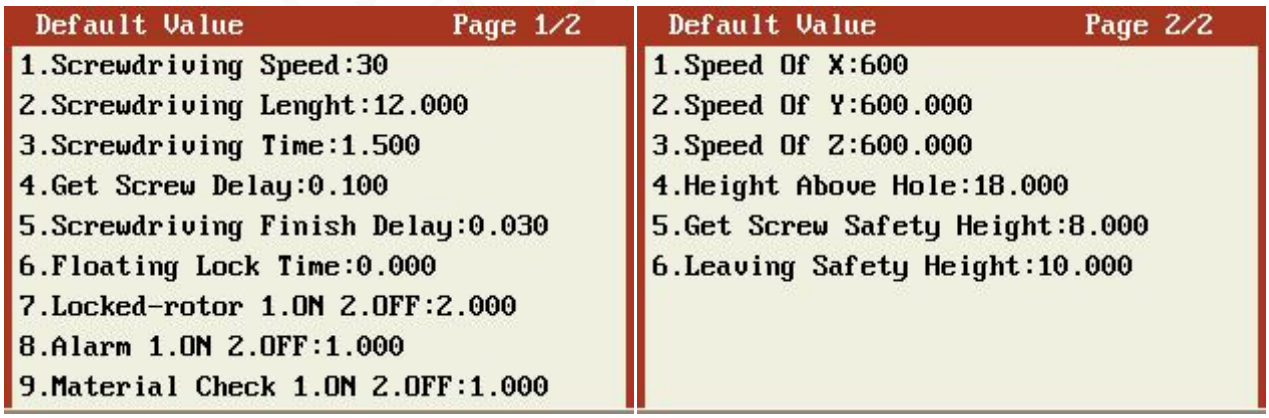


7.47 Page 6 4. Update Fonts

Insert Udisk, update UNI and OEM.

Chapter 8 Default Value

Use "Stop" + "Menu 2" to enter the default parameter setting menu, press "Up" and "Down" to proceed to the next line and the next page.This menu content is not recommended for users. The default parameter Settings menu includes the following contents

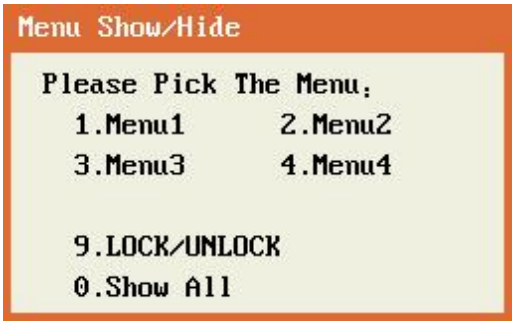


The default parameters are mainly the processing parameters in the application of the screw. If the above parameters are not set in the processing programming, the parameters set in the default values are used.

Chapter 9 Menu Show/Hide

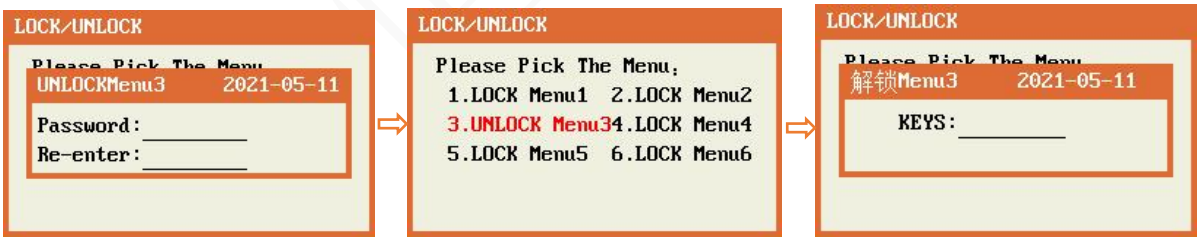
Use "Stop" + "Menu 3" to enter the setting interface of "Menu Show/Hide". This menu content is not

recommended to be opened to users. The menu show and hide interface includes the following contents:



Please pick the menu: Press the corresponding number in the menu to enter the interface as shown in the following figure, and then press "Enter" to select the function options to be displayed or hidden, press "Help" button to quickly reverse selection, and press "View" button to select all or clear.Press "Cancel" to exit after setting

LOCK/UNLOCK: Press the number corresponding to the menu to enter the lock setting interface. After entering the interface, first set an 8-digit key. After successful key setting, the menu word will be displayed in red.If you need to unlock the menu, enter the 8-digit key set at the time of locking and then press the "Enter" key to unlock the menu.



Show all: After entering this mode, all the hidden functions set before will be displayed. If you need to exit, you can press "0" to exit or power off and restart the system.